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A REVIEW OF THE MEDICAL LITERATURE OF 1903.

INTERNAL MEDICINE.

IN CHARGE OF

JESSE S. MYER, M. D.

Investigations concerning the functional state of the kidneys have continued throughout the year with much enthusiasm. Casper and Richter, Koranyi and others who have been foremost in advocating cryoscopy, the phloridzin test, etc., have corroborated their early results and attribute the greatest importance to their findings.

Israel, who does perhaps as much kidney surgery as any present-day surgeon, is still dubious as to the absolute reliability of these methods. He believes that the results do not have the same significance in all cases, and says that we are not yet out of the danger of occasionally losing nephrectomized cases from an insufficiency of the remaining kidney. He has observed cases in which, in spite of a sufficient kidney function, an abnormally high freezing point of the blood existed (malignant kidney tumors, pyonephrosis, etc.). On the other hand, insufficiency of the kidneys, accompanied by a hydremia, may simulate normal conditions. He recalls a case, in fact, in which the normal freezing point of the blood was found in a case of anuria of four days standing, with beginning uremia, the result of destruction of the right and occlusion of the left purulent kidney. This was due to the fact that there existed simultaneously hydremia and anemia.

Israel does not agree with Casper and Richter in their statements with reference to the direct ratio between the amount of sugar excreted after the phloridzin injection and the amount of functionating kidney parenchyma. He thinks that the phloridzin method does not permit of certainties in diagnosis, but of probabilities. Casper and Richter maintain, however, that in eighty-eight operations they have not had occasion to report a single death. The function of the supposedly normal kidney is tested in every case, and, if found sufficient, operation upon the other is advised. Their results have certainly been very convincing. They have modified their original statement somewhat with reference to the direct ratio between the sugar excretion after phloridzin injection and the functionating parenchyma, and now state that "the absence of sugar excretion after phloridzin points to a high degree of kidney destruction; the greater the amount of functionating kidney parenchyma remaining, the greater is the phloridzin glycosuria."

Bujnewitsch agrees with Koranyi, that cryoscopy not only enables one to determine the state of the kidneys, but permits of certain conclusions as to the portion of the parenchyma involved, viz.: the glomeruli or the tubules, or both.

According to Koranyi, compensatory disturbances of the heart, and changes in the constituents of pleuritic and peritoneal exudates, are manifested early in corresponding cryoscopic changes in the urine.

Bujnewitsch considers the determination of the freezing point of greater importance even than the microscopic and chemical findings, because it permits of a diagnosis even in the absence of casts, albumen, etc., and at the same time gives an idea as to the severity of the disease.

Mircoli says that kidney diseases belong to a class which often remain latent. He finds that it is possible in alcoholism, gout, lead intoxication, etc., to determine through cryoscopy when the functional insufficiency of the kidneys begins even in the absence of manifest symptoms. He finds the methylene-blue method of Achard and Castaigne (rosalin, salicylic acid, potassium iodide and phloridzin) inadequate for exact purposes. Mircoli recognizes two mechanisms in the kidney—that of water secretion through the glomeruli, and that of the solids through the epithelium of the uriniferous tubules. Through the observation of the concentration and quantity of the urine in every phase, at various times during the day, in normal and abnormal conditions, he finds that the amounts of the solids and liquids bear a constant relationship to one another in the normal and vary greatly in diseased conditions.

Senator calls attention to a unilateral contraction of the abdominal walls which often occurs in stones in the kidney and inflammatory processes in the kidney pelvis.

In spite of the fact that many question the existence of a physiological albuminuria, Senator mentions that it may occur following physical exertion, cold baths, hearty meals, excitement, etc. He believes that through constant overexertion a disease of the kidney may develop. He calls attention to the fact that albumosuria is not revealed through boiling, and that a cold test should therefore be made in every case. Albumosuria may occur before or after albuminuria and is a warning of great importance. He considers the Bence-Jones bodies a tolerably sure sign of the existence of some severe, anemia producing disease of the bones. Casts are a product of disturbed action of the epithelial cells of the uriniferous tubules. Their absence does not permit of the conclusion that no disease exists. Their development without albumen points to a localized affection of the kidneys. Senator was one of the first to maintain, and still upholds the belief, that the leucocytes of the urinary sediment in Bright's disease are chiefly mononuclear, in contrast to those from the kidney pelvis, bladder and urethra.

Leclerc believes that a diagnosis of chronic interstitial nephritis may be made without the presence of albumen and casts in the urine. In such a case he basis a diagnosis upon the following symptoms: hypertrophy of the heart, gallop rhythmus, accentuation of the second aortic sound, high tension, rapid pulse, polyuria, light color and low specific gravity of the urine, dyspnea at night and upon exertion.

Though promulgated by Widal about two years ago, the so-called cytodiagnostic has recently received a new impetus, and has been the subject of much careful study. Under this head is understood a diagnostic method em-

ployed for the determination of the etiologic factor in the production of effusions in the various serous sacs. It depends upon the prevalence of the cellular elements in the exudates and the ratio they bear to one another. The examination of the exudates for a series of cases led Widal and his students to the conclusion that if the lymphocytes prevail—*i. e.*, the mononuclear leucocytes—we have to deal with a tubercular process (pleuritic, peritoneal, cerebro-spinal, as the case may be); that if the polynuclear cells outnumber—*i. e.*, the neutrophile and eosinophile white corpuscles—the process is of an infectious, non-tubercular process (staphylo-strepto-pneumo-meningococci, etc.); that if the endothelial cells prevail it points to a mechanical process (transudate in heart, kidney, liver diseases, etc.).

Litten, Dopter, Dieulafoy and others corroborate these views in great part, but with certain important modifications. It has been found that during the acute stage of tubercular processes, polynuclear cells may be present in moderate numbers, that the lymphocytes begin after the second week to make their appearance. Ravout reports a case in which an early puncture showed polynuclear cells almost exclusively, and eleven days later they had given place entirely to the lymphocytes. It is well, therefore, if in doubt, to make repeated examinations. Most of the observers agree with reference to the non-tubercular infections.

Of late the examination of the cerebro-spinal fluid has attracted the attention of those heretofore interested in the subjects just touched upon. The lumbar puncture gives ready access to the cerebro-spinal fluid, which normally contains no cellular elements. This fact, while doubted by a few, is borne out by a very large majority of the observers. The rules which apply to the exudates of other serous sacs also apply here. Griffon, Achard, Arloing and others bear out the view that lymphocytes are the prevailing cellular elements in tubercular meningitis, while the polynuclear cells prevail in other infections of the meninges.

It must be noted, however, that Courmont and Arloing found no cellular elements in a case of undoubted tubercular meningitis, while Barjon found lymphocytes and polynuclear leucocytes in equal numbers in one case.

The recent observations of Sicard, Babinsky, Widal and others have created much interest among neurologists and internalists. They have found that lymphocytosis exists in general progressive paralysis, tabes dorsalis and meningomyelitis, and is absent, or normal at any rate, in the cerebro-spinal fluid in hemiplegia, epilepsy, alcoholism, peripheral neuritis, diseases of the muscular system, neuroses, psychoses and brain tumors.

The subject offers a splendid field for further research. The method promises to be quite as important and quite as exact as many which have been long employed. Like many other rules, these also have their exceptions. Though raised by some, this objection cannot belittle the importance of cyto-diagnosis.

Of late more attention than usual has been devoted to a consideration of the proteolytic function of the gastric juice. Indeed, since the appearance of Pawlow's epoch-making work on the digestive glands a new impetus has been given to a consideration of the physiology of digestion in general in its application to therapeutics. More and more are we being brought to a realization of the importance of a thorough knowledge of dietetics in the treatment of gastro-intestinal disturbances and the relative unimportance of drugs. There can be no doubt

but that the gastric secretions can be controlled in a very large measure by variations in diet, and the sooner the subject is considered seriously by therapeutists, as well as physiologists, the sooner will we meet with desired results in the treatment of gastric disturbances. In the consideration of the proteolytic function of the gastric juice, the Mett method, though not all that could be desired, seems to be the most practical and, therefore, the most popular.

Though little that is new has been added to our knowledge of the subject, the usual number of papers have appeared on disturbances of gastric motility. There are but few now who do not concede that motility is the stomach's most important function. A subject, therefore, of such importance bears much repetition, and cannot be worn threadbare.

Though a few scattering articles have appeared on the subject of absorption in the stomach, its importance to the therapeutist grows less and less. The question has a great scientific interest, but less practical importance.

Our knowledge of the pancreas has increased very rapidly in the past twelve months. This, too, is largely due to the new impulse given to the work through the publications of Pawlow on the physiology of the pancreas and to the interesting work by Opie and others on the pathology. These revelations have added materially to our ability to clear up diseases of an organ which has been up to this time but little understood.

There has been much discussion with reference to the succussion sound (Plaetschergerausch) and its relationship to atony of the stomach. Spiller has long maintained that the epigastric succussion sound is a pathognomonic symptom of atony of the muscles of the stomach, and especially so when present a long time after the ingestion of food. Elsner, on the other hand, considers the phenomenon nothing more than an accompanying symptom of gastroptosis in cases of relaxed abdomen. Cohnheim takes an intermediate stand; he does not consider the succussion sound a symptom of atony *per se*, but believes that in the absence of relaxed abdomen it is an indication of Spiller's asthenia universalis congenita, the so-called habitus enteroptoticus. He thinks it may exist in perfectly normal individuals, in whom the predisposition to neurasthenia gastrica exists. He considers it a signal of warning, and anyone presenting the symptom is always in danger of developing a nervous, functional, chronic stomach trouble. There is a wide difference of opinion, therefore, among careful observers with reference to this sign. If one would base one's opinion of the subject upon the literature alone, it would be very difficult to arrive at a definite conclusion. The probabilities are that the succussion sound accompanies every case of atony, but that there is not necessarily atony in every case in which the succussion sound occurs.

v. Aldor claims to have obtained excellent results in his treatment of chronic colitis through the use of high injections. His observations on the subject have extended over a period of five years, and have been so satisfactory that he feels compelled to differ with those who claim that it is not possible to pass a rectal tube throughout the length of the colon. Aldor claims to introduce a rectal tube 85 cm. in length into the colon, through which he empties from one to three liters of Carlsbad Sprudel water heated to 45–50° C. These injections are applied every day for a period of twenty to twenty-five days, gradually increasing the amount from one to two and one half liters. He maintains, in opposition to Boas, Pollatzek and others, that the application of small quantities of

water is practically worthless, especially when given in the form of a simple rectal injection. The effect of such a procedure must be purely local, and could have no influence upon a general colitis.

Boas, on the other hand, not only does not favor large quantities of liquid, but even considers it dangerous, maintaining that it produces a dilatation of the rectum and sigmoid with tenesmus. v. Aldor states that such cannot be the case when the high injections are made.

Boas does not believe that a tube can be passed through the sigmoid flexure, and states that he has never succeeded in passing a tube further than 15–20 cm. In those cases in which it is claimed that the tube was introduced a half meter or more it has simply been coiled up in the rectum. This he has demonstrated, not only upon the living, but also upon the cadaver.

Though it is possible that v. Aldor has, as he claims, succeeded in introducing the rectal tube 85 cm. into the bowel, the weight of the evidence is against him. He bases his statements purely upon the clinical results obtained in his cases, while those who differ with him have conducted careful investigations along this line based upon anatomical relations. It remains now for v. Aldor to prove that the tube is in the colon and not rolled up in the rectum, which should not be a difficult matter.

In 366 cases of intestinal carcinoma, Boas observed twelve cases of diabetes. In five cases the diabetes was still manifest, in the other seven it had disappeared before the appearance of the carcinoma. He noticed in four cases that the carcinoma advanced with the diabetes, and in cases in which the diabetes decreased the carcinoma progressed more slowly. It is hardly probable that the carcinoma produces the diabetes. Glycosuria is primary; carcinoma is secondary. It is interesting to note that with the beginning of carcinoma there is often noticed an increased tolerance for carbohydrates. He observed that latent diabetes is sometimes made manifest by an operation. He advises that, if possible, the patient should be subjected to rigid treatment before the operation, in order to reduce the sugar as much as possible.

The observations of Dunbar, of Hamburg, relative to hay fever have been widely published and have evoked no little interest in every land in which this disease exists. If we may accept his preliminary experiments as final, many of our long-cherished theories concerning the affection must be discarded. His results are certainly quite conclusive, and there can be no doubt that he has found the solution to the etiological factors concerned in a certain class of cases. Dunbar has demonstrated the existence of a poison in pollen which he has been able to isolate. The pollen is dissolved in ether and the toxin precipitated with alcohol.

This toxin is very readily soluble in saliva, tears, nasal mucus and in blood serum. When this toxin is introduced into the nose and conjunctival sac of those disposed to hay fever, regardless of the season of the year, it produces sneezing, itching, tearing, etc. If introduced subcutaneously it produces, aside from these symptoms, dizziness, hoarseness, pain in the chest, audible breathing, etc. He was able to produce a short period of immunity in those subject to hay fever by injecting, hypodermically, the serum removed from animals that had been inoculated with the poison. Those who on previous days showed a marked reaction to the pollen applied to the nose or eyes, after such an inoculation showed none whatever. This immunity lasted but twenty-four hours.

If, on the other hand, serum is mixed with the pollen toxin it is rendered

practically inert, such a mixture producing no symptoms if injected hypodermically or applied locally to the nasal mucous membranes. Some animals show a greater susceptibility to the poison than do others—goats and rabbits being especially susceptible. The author has experimented with pollen from various climes and has succeeded in obtaining rather constant results. Patients have been reported entirely relieved during their critical periods through the persistent use of the serum. Though the application of such a serum may not prove entirely practical as a therapeutic measure, it will at least enable us to differentiate between the true and false types of hay fever.

The antitoxin has no effect whatever on cases of bronchial asthma, cardiac asthma, influenza and nervous affections of the upper respiratory tract.

The sleeping disease, though unknown in our country, is of universal interest. During the past year several expeditions have been sent to West Africa for the special purpose of studying this disease. Not until 1887 did the affection begin attracting serious consideration. All negroes in this clime over three years of age may develop the disease. Children under three seem to be immune. It begins with loss of weight, delirium, pain in the back and occiput, and, finally, sleep. It may last from twenty days to twelve months and invariably terminates fatally. Europeans seem to be immune.

Sombon and Castelloni attribute the cause of the disease to trypanosomen in the cerebro-spinal and ventricle fluids. They believe that they are transmitted through the eating of raw fish which have been infected by the Tsetse fly. The disease is in all probability infectious and transmitted through the saliva.

Manson reports four cases of trypanosomen infections on the Congo. The clinical picture is altogether different from that of the sleeping disease, and occurred in Europeans. While it is probable that the entrance of the trypanosomen into the central nervous system would produce a peculiar set of symptoms, it does not seem probable that this possibility is confined to the negro alone.

These parasites live in the blood plasma and multiply by division. If they appear in the peripheral circulation a prolonged remittent type of fever develops. They can frequently be found in the bone marrow after the disappearance of the fever.

Kober presented at the last meeting of the Association of American Physicians a very complete resume of clinical reports upon the transmission of bovine tuberculosis. He has tabulated some eighty-five cases. This careful review of clinical cases, which were reported by most reliable observers, when taken in connection with laboratory experiments, seem to justify the author's conclusions. He believes firmly that tuberculosis may be transmitted to man through the milk of tuberculous cows. The danger from this source cannot be measured by the actual number of recorded cases, but should be judged, in part at least, by inoculation and feeding experiments and the accidental wound infections, which have established the intercommunicability of bovine and human tuberculosis. He believes that Koch's theory that human and bovine tuberculosis are distinct and that human tuberculosis cannot be conveyed to cattle, has been disproved. He warns the medical profession against the acceptance of these theories until further and more convincing proofs are offered.

Trudeau agrees that avian, bovine and human tuberculosis are alike, and claims to have demonstrated that avian tuberculosis will protect rabbits against that of man.

Behring and others have immunized cows against infection by bovine tuberculosis by preventive inoculations of cultures of human origin.

A year ago this subject was mentioned by us in a similar review. The subject has not been cleared up through this year's work, but the results of the greater part of it seem to be opposed to the theories expressed by Koch at the British Tuberculosis Congress.

SURGERY.

IN CHARGE OF

WILLARD BARTLETT, M. D.

Probably more has been written during the past year upon the surgery of the digestive tract than upon any other one subject. The vital importance of the subject seems to have stimulated authors and operators to do their best to advance our knowledge and technique as here applied. An exhaustive article by Brunner on acute perforating gastric and duodenal ulcers, contains the knowledge that the accident is ten times as common among men as among women, something which is, of course, of value from the standpoint of differential diagnosis. A point of great value in this connection is, also, the information that the patient has suffered for years from the well-known symptoms of chronic ulcer. The best form of operative treatment is excision of the ulcer and suture; all other methods of patching with omentum, etc., being of doubtful value by comparison. Statistics teach that about one-third of the stomach cases are cured by operation, while the prognosis for a like lesion in the duodenum is somewhat worse.

Congenital intestinal occlusion in the new-born is exceedingly rare, as shown by Savariaud, and is located, in far the larger per cent. of cases, in the small bowel, high up. The lesion is, further, frequently multiple, as many as five having been observed in the same individual. In addition to the ordinary symptoms of obstruction, there can be no feces found in the colon upon washing, and the child usually dies in from five to seven days. In forty-four collected cases, not one was saved by operation, though it was resorted to in all.

Duval calls attention to what he calls "idiopathic dilatation of the large intestine;" consisting, as the name indicates, of an abnormal distention of the gut, it may be locally or of the entire colon. The wall of the gut gradually undergoes a pronounced change, while the leading symptom consists of retention of feces, in one case for thirty days. At the same time severe diarrhea has been observed; an evidence of colitis. Of forty-seven recorded cases, thirty-four died early in the disease.

Thrombosis and embolism of the mesenteric vessels have always been a bugbear of intestinal surgery; the statement is borne out by the report of four cases by Falkenburg, none of which were operable. This is not invariably true, however, as shown by the two cases of Elliot and Sprengel, both of these surgeons having been so fortunate as to save their patients, though it must be admitted that the operations (the only successful ones of the kind in the history of surgery) were both done while the patients were still in excellent condition.

In the study of intestinal obstruction, nothing is of more importance than the character of the narcosis employed. Provided this be of a general nature, we always have to do with the danger which arises from the inspiration of vomited fecal matter. This danger had never been successfully combated until Kausch invented a device for plugging the cardiac outlet of the stomach during the narcosis. This consists of a stomach tube fitted to a hollow rubber ball, which is introduced into the stomach, then inflated and withdrawn until it blocks the outlet. Through the tube in question the stomach can be emptied as the intestinal contents enter it, but nothing can escape around the tube and thus be drawn into the air passages. Meanwhile, the general anesthetic is administered without interruption.

Beyea claims the credit for an original operation in his recent proposition to elevate the displaced stomach by plication with sutures of the gastro-hepatic and gastro-phrenic ligaments. He places a row of interrupted sutures clear across, taking about four centimeters of tissue in each; these are run in the vertical direction as a matter of course, and when they are tied have the desired effect. His oldest case has been under observation for a period of five years, having gained no less than forty pounds during this period.

We seem never to be able to settle the much-mooted question regarding the length of bowel which can be resected without sacrificing the life of the patient. Nagano, who has made a large number of animal experiments, expresses the opinion that one-half of the small gut can be removed without death; and even more than that, if it be the ileum which is chiefly affected. The matter becomes altogether different, however, when the uppermost portion of the small bowel is affected; here the tissue weighs more for a given length, and contains a greater number of glands, showing that it is of greater importance, thus explaining why it is that we cannot remove as much of the lower as of the upper portion of the small bowel.

One of the numerous reasons for intestinal obstruction is volvulus of the cecum, due to shrinkage of the mesentery. In a lengthy article, Brehm throws much light upon the mechanics of the undesirable condition. In some cases the shortening is so great in the mesentery that the two limbs of the gut are made to approach very closely to each other, and then it is easy to understand that a condition which might not otherwise give rise to the slightest trouble, can easily bring about a twisting upon its axis of the whole loop. One of the diagnostic features of this malady of the sigmoid is, that it can often be reduced by a high injection of water. Still it must be added, that many of the victims never have an actual attack of obstruction, but merely suffer from chronic constipation. Various therapeutic measures have been suggested. It is not enough to merely reduce the volvulus, nor is it sufficient to attach the bowel to the parietes, since that does not protect the individual against a recurrence; either a resection must be done, or else an entero-anastomosis between the two limbs of the loop must be made.

Entero-anastomosis is highly praised by Prutz as the best means of circumventing all sorts of mechanical obstructions; especially is this true, of course, in case the obstruction cannot be removed as such. The author admits, however, that the most effective anastomosis which can be made, will not divert all of the fecal stream from a fecal fistula which it is desired to close in this way. Of course, an anastomosis cannot be expected to be of the greatest service where

the muscular power of the bowel has been seriously impaired; here an enterostomy is of far greater value.

In no department of the surgery of the digestive apparatus has more advance been made than in that of the rectum for cancer. Since the original operations by Kraske and Kocher, there has been a constant attempt to make the process more simple and lower the mortality. Wensel has recently written of how Witzel strives to make extirpation of the rectum an aseptic and bloodless operation. This he does primarily by sacrificing the anal portion altogether. At best, it is of doubtful value after a segment of the rectum has been removed, while its preservation brings with it certain and grave dangers. The author does not resect any portion of the sacrum, ligates all of the hemorrhoidal arteries, and then, after removing as much of the bowel as may be necessary, contents himself with making a gluteal artificial anus. Of seventeen patients operated upon after this fashion, not one died as a result of collapse or of hemorrhage.

One of the most interesting reports of operations upon the upper portion of the digestive tract comes from Mandleberg, who removed a section out of the continuity of the esophagus, and then did a large amount of plastic work in closing the resulting fistulæ. First, a low fistula was made, through which the patient was nourished for a month, and then five centimeters of the tube, including a carcinomatous constriction above the opening, were resected. Then, after two trials, they accomplished the feat of manufacturing a posterior esophageal wall out of a skin flap, which was allowed to heal in place, and later was brought together in the median line, completing the tube. One year later all was completely healed, the patient swallowed as well as ever, and the section of esophagus which was composed of skin seemed in every way to perform its function as well as the remainder of the tube.

Contusion of the abdomen, with or without visceral injury, still offers a fruitful field for endeavor. We still find it difficult to make the differential diagnosis in many cases, while the treatment is often unsatisfactory unless it be instituted very early. Fraenkel writes that a gradually increasing temperature, no matter what the other symptoms, always has indicated, as far as his experience has gone, a serious visceral lesion. He lays stress on the fact that the patient must be seen every hour during the time that the surgeon is trying to make up his mind whether or not to operate, else he will not be in position to appreciate changes in the condition as they arise. He warns against the too free use of saline and other stimulants, since there is danger of increasing the quality of the pulse so much that the attendant may be deceived thereby even when a serious internal lesion exists.

Formerly we allowed all those typhoid patients who suffered a perforation to die, but now it has generally become a recognized surgical procedure to operate, since we have seen, from large statistics, that from one-fifth to one-fourth of these unfortunates can be saved. Fix, of Paris, expresses the urgency of the matter aptly when he states that he considers operation as necessary in these cases as the operative opening of the air-passages in diphtheritic stenosis. This entire subject of the surgical treatment of typhoid perforation seems to have been revolutionized by the work of Escher, who wrote with especial reference to the advisability of sewing up the perforation or of establishing an artificial outlet instead. He compared the results obtained by laparotomy in which the

perforation was not found at all, but the belly simply packed and a fistula allowed to form, with the results accomplished in those cases where the perforation was sutured, and found that only about half as many of the latter recovered as did where no gut sutures were introduced. In consequence, he treated four perforations by simply bringing the affected loop up to the wall and allowing a fistula to form, whereupon three patients recovered—something which had not been accomplished by any other operator. His reasons for adhering to this course are, that the gut is thus not narrowed at the site of suture, a paralytic ileus is avoided, and, most important, the operation is expediated. These results are simply in line with what Lund wrote about—the value of enterostomy in selected cases of peritonitis; its chief value lying in the relief of toxic substances retained within the bowel, which otherwise would not be expelled on account of a paresis due to the peritonitis. Of course, the making of a fistula is recommended only after all other means have failed. Of four such cases the author saved three; surely a good argument for his point.

Lennander has done so much good work that his opinion of abdominal questions must always deserve respect. He says when in doubt, always operate in an acute case. As a help to diagnosis in appendicitis, attention is called to the fact that pain accompanies such lesions only after the nerves in the parietal peritoneum have become affected in some way. This is proven by the author's previous work along this line showing that there is no sensation to the hollow viscera except when the mesentery is dragged upon. As far as the interval operation in appendicitis is concerned, the author advises it in every case where there has been *one* attack of the malady.

The advantages of posterior through-and-through drainage of the abdomen are well shown by Park in a case where there was a gunshot wound clear through the stomach with extravasation of contents. Where drainage is to be used at all, the through-and-through variety is surely the best.

Since there has been so much written lately upon the surgical treatment of gastric ulcer, it is of interest to note the results which internal treatment have been able to bring about. Schulz finds that there is a very decided mortality reported in the literature; that is for 291 cases 9.6 per cent. This furnishes us with an additional argument to those usually advanced by the surgeons for early operation in all cases which are not very promptly relieved by internal medication.

The Vicious Circle has received its customary share of attention, and perhaps the best suggestion of the year for combating the same is one by Mattoli, who believes that the return flow of bile and pancreatic fluid have very little harmful effect upon the stomach. He proposes to narrow the afferent loop after the union has been made by inserting a few peritoneal stitches which create a longitudinal flooding of the same. After this has been done he advises an enterostomy.

Volvulus, as is now generally admitted, is found only in those individuals who have an unusually long mesentery in some part of the intestinal tract. This has been further confirmed by various writers during the past twelve months, no matter which part of the bowel they have found affected. In this connection Wandel states that he found a very long ileo-cecal attachment in 800 post-mortems. Reasoning from this anatomical fact, one would then naturally expect that about one in one hundred individuals might be the victim of volvulus at this point. The diagnosis of this affection has recently received considerable

attention at the hands of Faltin. He gives as the main point in differential diagnosis between volvulus of the cecum and volvulus of the sigmoid flexure that in the latter affection only a very small quantity of fluid can be retained, whereas in the former a klysma of much more than a quart can be introduced and held.

America furnishes the largest and most exhaustive report on stomach surgery for the past twelve months, W. J. Mayo having reported 303 operations. He gives as his opinion, after such an extended experience, that the fundus of the stomach alone should be left behind in partial resection of the organ. Twenty-two out of twenty-seven cases, which were operated upon by him in this manner for cancer, recovered; and it is interesting to note that his mortality in gastro-enterostomy was still somewhat higher, evidently due to the fact that he gave all of his most promising cases the benefit of the doubt and performed a radical operation, selecting for palliative treatment only those which were already far gone.

A tribute is paid to American surgery by the clinic at Tuebingen, when Trendel admits in his exhaustive article that the best method of performing a gastrostomy has been determined, as a result of their experience, to be that with the Murphy button.

One of the most interesting cases reported recently is that of Hollmann, in which a gangrenous intussusceptum was passed by the patient four months after the clinical recovery from a well-pronounced attack of ileus. An examination of the slough showed that it had consisted of an invagination of the entire ileocecal region. A similar case was reported by Schridde recently. His patient had a similar experience seventeen days after the beginning of the attack. Four months later he died of pneumonia, and at the autopsy there was found a circular scar in the ileum a short distance from its lower end without any stenosis, the reunion of the gut having been as perfectly made as could have been possible in the hands of the best surgeon.

An apparently useful innovation in the performance of gastrostomy comes from Guillot. He proposes to unite the two outer coats of the stomach to the abdominal wall and then draw up the mucous membrane in the form of a little pouch which is twisted for 180 degrees upon its axis, then cut open and sewn to the edges of the skin wound. By this simple procedure it is expected that spontaneous closure will be effected and leakage of stomach contents prevented or reduced to a minimum.

Lindner advances a most startling and radical idea for the treatment of that form of intestinal neurosis which brings about a paresis of the colon. He suggests that the lower ileum be divided and the proximal end be transplanted into the sigmoid flexure. In this way he believes that the function of the gut can be perfectly restored in all cases. This would, however, seem to the reviewer to be a little too severe a form of treatment, when the mildness of the symptoms are taken into consideration.

The experience of Mayo, who recounts the fact that one gut suture gave way on the seventh day and another on the ninth day after operation, proves to us, as the author remarks, that Chlumsky's results gained from animal experimentation cannot be directly applied to the human subject, in which the healing process generally takes longer than the German author supposes.

The treatment of ulcerative colitis by colostomy and irrigation receives warm endorsement at the hands of no less a distinguished authority than Boas,

who reports a case of five years' standing. The recovery was slow; but within a year after the performance of the operation the patient was perfectly well in every particular, the opening having been artificially closed.

In recent proposals to invaginate the vermiform appendix for disease of the same, surgical writers have evidently ignored the fact that this procedure has been a prolific cause of disease. Reference is made in substantiation of this statement to an article by Ackermann, in which are collected the histories of eleven cases from the literature, which go to show that the inverted appendix formed the head of the column in ileo-cecal intussusception. In these cases the process was a spontaneous or idiopathic one; but of course there is no reason why an artificial invagination of the appendix might not be followed by the same disastrous results.

Too much stress cannot be laid upon the now well-established principle of making resections of the colon at two or more sittings. Goeschel reports good work in this line, and substantiates the earlier statement of Mikulicz, that the mortality has been reduced by this procedure from 40 per cent. to something like 10 per cent. Especially is this valuable in those cases which are operated while suffering from acute obstruction.

The surgery of the gall bladder and bile passages has received its customary share of attention during the last year. One of the American articles, which has been most extensively abstracted in the German language, is that by Woods Hutchinson on the uselessness of the gall bladder. He says that this pouch is a relic from an earlier period of our development, and represents one of the primary diverticula which has as yet not entirely disappeared. He draws the well-known comparison between this sack and the vermiform appendix, especially with regard to the very affections common to the two. It is his opinion that no physiological effect follows the removal of the gall bladder and the conversion of the bile flow from an interrupted to a continuous stream. Careful investigations have shown that the gall bladder is, as far as size is concerned, a most imperfect reservoir, it being able to contain at one time not more than one-twentieth to one-thirtieth of the amount of bile which is secreted in twenty-four hours; that is, it holds not more than the quantity which the liver is capable of furnishing in thirty-five minutes. Hence it cannot be urged as a reason for leaving the little sack in its place that it collects all of the bile which is secreted between meals and then pours it out while the food is passing over the outlet of the common duct. Surgeons are coming more and more to the idea that the gall bladder should be removed wherever there is no contraindication present; that is, where it is to be operated upon at all. Of the great surgeons who have held the contrary opinion, Professor Czerny may be mentioned as the most notable exponent, but now he, too, agrees, and in view of recent experiences, that he would have done far better in certain cases, which terminated fatally, had he removed the gall bladder rather than been satisfied with what he then regarded as a conservative operation.

Cholecystenterostomy has always carried with it the danger of serious results in consequence of infectious material being carried from the intestine to the gall bladder. This danger is, however, considerably diminished by a procedure which originated with Krause, who has for some time been in the habit of creating an anastomosis between the two limbs of the loop of bowel used in the procedure. Of course, the rationale of the procedure is that the intestinal

contents are side-tracked, so to speak, and in large measure pass through the new opening instead of following the course of the entire loop, and thus constantly bringing infectious material to the new entrance of the gall bladder.

Resection of the liver was for a long time regarded as one of the most formidable and doubtful of all the surgical procedures. But now, as Anschuetz writes, Ponfick has proven, for the lower animals at least, that three-fourths of the organ may be removed without the life of the animal being absolutely endangered thereby. Formerly we regarded hemorrhage as a very grave danger in this connection, but now modern investigations have shown that the vessels of the liver present about the same characteristics as do those of most other portions of the body; hence they are amenable to the same methods of treatment, and we find it no longer necessary to resort to the many unsurgical procedures which have been employed with varying results in this class of surgery. The author proposes, in making a liver resection, that the tissue be transfixed in several places and tied off *en masse* with heavy ligatures, thus embracing all of the vessels likely to bleed, after which the desired portion can be removed without especial concern.

Enderlen has recently published work which was done at Marburg to ascertain whether or not it is possible by transplantation to cover defects in the wall of the gall bladder. He gives a negative answer to the question of the possibility of anything being accomplished in this manner unless it happens that the omentum completely covers the field of operation. In all such experiments the flap became gangrenous; consequently he advises that rather than attempt in this way to close a defect of the gall bladder the viscus should be removed. In a case reported by von Lieblein there was an extreme mobility of the gall bladder, due to the fact that it was connected with a flooding lobe. But most interesting of all, this gall bladder was the site of extensive stone formation, and presented a most unusual picture through the very thin abdominal wall, proving once more the well-known effect of stagnation in conjunction with infection as the leading etiologic factors in these cases.

The subject of hernia in general seems year by year to come nearer to its solution. Of all the varieties, umbilical hernia had always furnished the surgeon more work and less satisfaction than any of the other forms until Mayo introduced the vertical over-lapping operation. In his report of twenty-five such operations, published last July, Mayo states that he has not had a recurrence, something which may be regared as distinctly encouraging, in view of the results which have been attained by the use of the various other methods. The procedure is certainly not very difficult, as the reviewer can attest, and if others are only nearly as successful as Dr. Mayo has been in its use, then there is no reason why the results in umbilical hernia shall not soon approach those in the inguinal variety. What seems to be an excellent suggestion in treating these individuals, who are notoriously fat, as a rule, comes from Pauchet, namely, to place the patients in bed and allow them to be almost starved for a number of days before the operation. In one case the French surgeon saw a loss of forty pounds as a result of dieting for eighty-five days, during which time he gave his patient nothing but lemonade, salad and apples. In this way the abdominal wall becomes greatly thinned, and in addition the contents of the abdomen shrink considerably.

One of the most unusual and startling forms of hernia consists in prolapse

of the intestines through a tear low down in the bowels. Moszkowicz reports a case in which the mesentery of the small intestine and that of the sigmoid flexure was so long as to allow portions of these viscera to escape through a tear two and one-half inches in length. Although a laparotomy was made, together with resection of the small intestine, the patient succumbed.

In discussing hernia one is prone to forget that there are other varieties beside the various ones which affect the abdominal contents. An interesting case is reported by Cahier, in which there was a protrusion as large as a quarter of an orange of the muscular substance of the anterior surface of the thigh, after an accidental stab wound. This could not be replaced, so it was resected and the edges of the fascia reunited with sutures. The author goes deeply into the diagnosis between the true and false muscle hernia, stating that the main point of difference is that in the false variety stretching of the affected muscle apparently relieves the deformity, which cannot be said for the true variety.

One of the most extensive contributions of the year to the surgery of the respiratory appendix is from Schwartz, the well-known Parisian surgeon. He gives it as his absolute opinion that there is no use in trying to reach the bronchi except through the posterior mediastinum. This is best done by making a lateral flap which includes the fifth and eighth ribs. He is careful to state, however, that this severe procedure is indicated for the removal of foreign bodies only after every other means has been tried.

In order to determine the specific action upon the lungs of the staphylococcus, Silfvast infected animals by injection and by the inhalation of bouillon cultures. Then in studying the effect exerted upon the lungs of different animals, he noted that it was vastly more pronounced where certain of them inhaled extremely cold air or chemicals, which tended to lower the tissue vitality. It is worthy of note that under ordinary circumstances a large number of the germs were destroyed within the lungs, this being principally due to phagocytic action on the part of the alveolar epithelium as well as white blood cells.

The value of pleural adhesions in lung surgery has, as a matter of course, led to oft-repeated and extended discussion of the best means of producing the same artificially. Kerewski and Meyer give as their opinion that simple suture, as well as irritating injections, are both inefficient when it comes to producing adhesions the strength of which can really be depended upon. Hence they advise that a number of interrupted sutures be introduced into the intercostal spaces, the material used to be silk soaked in turpentine. At the same time it is well to tie around the individual ribs sutures of the same sort which pierce the lung tissue, and in this way the firmest possible adhesions can be produced within about three days.

The subject of lung surgery in general has made decided advances during the recent past. It is now generally conceded that we should treat abscesses, gangrene, etc., of these viscera in exactly the same way as we would the same lesions located elsewhere. The pathology and prognosis in the various visceral lesions are undoubtedly similar, no matter where these lesions are located, hence the treatments must in a measure be similar, even though we have to neglect the individual differences which exist in the various parietes.

Brain surgery is still sufficiently dark and difficult to make every unusual case worthy of being reported. Krogius recounts the history of a patient who presented all the symptoms of a tumor located in the motor area, and at the opera-

tion a mass was found and removed, the diagnosis having supposedly been entirely correct. But what was the surprise of the operator on examining the mass more closely to observe that it was nothing more nor less than an abscess so thickly encapsulated that it had deceived experienced observers and been taken not only clinically but upon direct inspection for a new growth.

An interesting chapter has just been added to the surgery of the central nervous system by Henschen, who tells in a recent article of a case which presented all the symptoms of a tumor of the spinal cord, and in which a gradual cessation of these symptoms led to the open diagnosis of the spontaneous disappearance of such growths. The author mentions the fact that the vascularity and other physical conditions obtaining in this locality really make it possible that such a disappearance might take place, and the theme of his article is the question of the probability of such an occurrence.

Cerebral hernia is fortunately uncommon; still it does occur with sufficient frequency to make it always a matter of interest to know just what we are going to do to remedy the defect in the skull which makes it possible. Hence an article by von Hacker is of interest, in which he describes an original process which consists in the transplantation of a pedunculated periosteal flap which is sewn into the defect inverted; that is, with the bone producing surface directed outward. The author admits that his experience is still too young with this method to be able to say what the effect on secondary bone production will be.

Among the various phases of head injuries the one which has always caused us the most uneasiness and been shrouded in the greatest uncertainty is fracture at the base of the skull. New light is shed upon the subject by Graf, who recently reviewed the work in Koenig's clinic from 1896 to 1902. The rather imposing number of ninety cases forms the basis for his work. He says that the most constant nerve symptom was paralysis of the facial, which occurred twenty-four times. This is produced by the pressure of a blood clot, and as a rule the function returns after the clot has been absorbed. Interesting eye symptoms were also noticed more commonly than seems to have been the rule up to date. Protrusion of the eyeball was not uncommon, and where the hemorrhage into the orbit was not so extensive as to produce this phenomenon, still extravasation beneath the eyelids was seen in a number of cases. It is interesting to note that of thirty-nine patients whose ears were carefully examined long after the injury, only twelve showed a normal condition. The most frequent constant symptom of all was bleeding from the ear, which occurred in sixty of the ninety cases. Stenger has also written lately concerning the value of ear examinations in fractures of the skull. His conclusions, like those of the foregoing author, also serve to impress upon us the value of this procedure, which all must admit has scarcely received the attention due it, although every well-informed surgeon understands that he has to depend to a greater or less extent upon the ear for a positive diagnosis. The escape of cerebral spinal fluid from the ear is regarded by Stenger as absolutely characteristic of fracture at the base, whereas he does not lay great value upon the mere escape of blood alone. However, hemorrhage from the external ear along with tearing of the ear drum is of considerably more value, although this last mentioned lesion is not of great value when taken alone. The psychical disturbances which occur after fracture of the skull have received more than passing treatment at the hands of Viedenz. He makes the interesting statement that 202 out of 1542 insane people under his care, that is 13.1 per

cent., blamed a head injury as the cause of their disease. However, it must be said in this connection that only 2.2 per cent. were entirely free from other predisposing affections, such as alcoholism, etc.

The surgery of the face, like the plastic surgery in other external regions of the body, from the mere fact that it is of much earlier origin than most of the other subjects treated in this review, has received less attention from surgical writers during the past year than the others. The difficult problem of treating ankylosis of the maxillary joint has received very intelligent treatment at the hands of Kusnetzki, who resected a portion of the ascending ramus on both sides and then implanted a flap of muscle between the freshened ends. He did this in two cases, and in both was gratified by seeing his patients at the expiration of months after the operation still able to separate the teeth for a distance of about an inch. This method of treating these difficult cases is surely more simple than several of the others which have been suggested, and has accomplished as much, to say the least.

Von Brune has just made a contribution to the subject of cancer about the lower portion of the face which can but be regarded as a distinct advance in the surgery of this portion of the body. Surgeons have long recognized the necessity of removing the lymphatic nodes in the cervical triangles; but many have been in the habit of protecting the sub-maxillary salivary glands, for the simple reason that not one expected regionary metastases to lie in them. However, invasion of them was occasionally noted in spite of this reasoning, and this was inexplicable and unexplained until von Brune found that very small lymphatic nodes lie well within the substance of these salivary glands; hence his most rational suggestion that these structures be entirely removed at the time the cervical triangles are cleaned out. A rare affection of the face, and one to which we do not see reference commonly made, has been recently written of by von Brune. This is rhinophyma, of which he has seen eleven cases. The affection consists in an overgrowth of the subcutaneous tissues about the lower portion of the nose. This was usually manifest in the form of single flaps or lobules, some of them being so long as to hang down over the mouth, and in some instances even over the chin, so that the process of eating was mechanically interfered with. Excision of these supernumeraries led to perfect results in eight cases; and the minute examination showed the diseased tissue to constitute multiple fibro-cyst-adenomata.

Our rather limited knowledge of the physiology of the thyroid gland makes all of the surgical problems which involve it of more than passing interest to us. One of the most interesting of these physiological problems which has come up lately in connection with the gland is the influence exerted by it, or, rather, by its activity upon the healing of fractures. After a series of animal experiments, as well as a study of the literature of the subject, Bayon has come to the very interesting conclusion that the formation of callous is decidedly favored by feeding the patient with thyroid extract or gland substance. In animals it is possible to greatly retard the healing of fractures by removal of the thyroid gland, and again to bring about a proper union after such an operation by feeding the animals with thyroid gland substance or properly prepared extract. Burghart and Blumenthal have built up a new line of treatment for exophthalmic goitre, starting from the idea that this malady and myxedema are directly opposed pathologic processes. They give their patients milk and blood

taken from goats and sheep which have been subjected to the operation of thyroidectomy. There is, however, a certain limit to the usefulness of the treatment; that is, where there are not already severe cardiac and other organic lesions present. In Italy further experiments along the line of the thyroid influence upon fracture healing have been made by Perrolini. This author explains conclusions similar to those above mentioned by the fact that there is a general improvement in the nutrition of all the tissues in consequence of thyroid feeding rather than in specific action upon cartilage and bone.

The operative technique in this portion of the neck has received its most extensive treatment during the past year at the hands of Orlow, who stated that of the fifteen or sixteen different methods and forms of incision proposed, all but his own seem to fail of satisfying each of the various proposals. In general, he is against preliminary ligation of the carotids, but is sufficiently broad to admit the operation may have definite indications in certain selected cases.

There has been work done during the last year on the vascular apparatus which seems little short of sensational, although, unfortunately, it is not to be recorded that a great deal of it was wholly successful. Gallois and Pinatelli made an anastomosis between the femoral artery and vein, in the hope of thus preventing gangrene of the leg, but without success. Halberstaedter saw gangrene of the leg follow the ligation of the femoral vein, and after investigating the subject thoroughly comes to the conclusion that collateral vein supply is only possible where the arterial pressure is well maintained and where the vein valves permit of a backward flow for a certain distance. He concludes that this accident (gangrene) is likely to occur only in a few individuals, this depending upon the original structure of the veins. The femoral vein was sutured with good result three times by Schonwerth, and this in spite of the fact that suppuration occured.

A series of interesting experiments by Baumgarten have shown that the blood in a portion of a vessel which is double ligated remains fluid for months, clotting having occurred only in those cases where there was so much injury to the coats by the ligation that some of the endothelium was lost. A number of animal experiments at the hands of Exner have proven that thrombosis of a vein always occurs after a vein and artery have been united. Jensen states as a result of numerous experiments and wide statistical study that no constant good results have been obtained by any method of circular suture of arteries, and he further informs us that the prognosis in veins is no better than in arteries.

Injuries, accidental or intended, form so conspicuous a part of our surgical practice that a few references to the newer work in this line are certainly not out of place. Weidenfeld has determined by exact measurements that there is an exact relation between the size of a burnt area on the exterior of the body and the death of the individual where fatal termination occurs. He has further found that the cutting away of the burned skin can in many instances prolong the individual's life, or, indeed, render the condition much more tolerable.

Meyer has made a study of one of the most interesting results of fractures, namely, the formation of traumatic aneurysms. He finds only sixty cases reported in the whole of medical literature, and adds one aneurysm of an intercostal artery following fracture of a rib. Another interesting though unfortunately fatal accident prone to follow fractures is that of embolism of the pulmonary arteries. Thirty-seven such cases were found in the literature by Smir-

now, who reports one new case in addition. Here the accident occurred three weeks after a fracture of the leg, while manipulation was being undertaken with a view of correcting the position of the bones. The moral here pointed is self-evident, namely, there is no certain means of knowing just when large vessels in the vicinity of the fracture are thrombosed, consequently we must be extremely careful about risking the loosening of such a thrombus, lest pulmonary embolism ensue with a fatal result.

THERAPEUTICS.

IN CHARGE OF

ALBERT E. TAUSSIG, M. D.

In common with its predecessors, the year 1903 has been characterized by a flood of therapeutic communications. Of these, however, but few are at once new, important and of such a character that they can reasonably be expected to endure the test of time and criticism. In the realm of serum-therapeutics the most significant advance is probably the confirmation and elaboration of the serum treatment of hay fever. As a result of several years of experimentation, Prof. Dunbar, of Hamburg, has shown that the etiologic factor in hay fever is the pollen of certain grasses, such as rye, barley, wheat, and especially maize. This pollen when applied to the nasal mucous membrane or the conjunctiva of people subject to attacks of hay fever, produces violent and perfectly characteristic paroxysms even in winter, when hay fever does not otherwise occur. Individuals not subject to hay fever are, however, entirely insensitive: the pollen produces upon them no effect whatever. By extracting the pollen with ether and precipitating the dissolved substances with alcohol, he obtained a soluble toxin that produced all the disturbances caused by the pollen grains themselves, thus showing that the latter did not act as a physical irritant. The pollen of roses, linden flowers and other plants which have been considered as giving rise to hay fever, was not only found itself unirritating but produced no toxin. When injected hypodermically into a sensitive individual, the pollen toxin produced not only all the symptoms of a severe attack of hay fever, but also marked vertigo and a bronchial irritation often amounting to violent asthma. At the site of injection there was usually great swelling and irritation. This artificial hay fever often lasted four or five days, as the result of a single injection of toxin. If, after the last trace of coryza and lachrymation had disappeared, pollen toxin was applied to the patient's nasal mucous membrane, little or no reaction occurred, showing that a certain amount of immunity had been acquired. This led Prof. Dunbar to attempt the production of a true hay-fever antitoxin. The pollen toxin was injected into rabbits, goats and later also into horses in steadily increasing quantities. The blood serum of these animals was found to contain a true antitoxin. When added to a corresponding amount of active pollen toxin, the mixture could be applied to the nostrils of sensitive individuals without producing any ill effects. Even after a violent attack had been produced by local applications of the toxin, all the symptoms could usually be promptly quieted by a subsequent application of the antitoxin. The most

striking results were obtained by the hypodermic administration of the antitoxin. After such an injection, no subsequent application of pollen toxin to the nose or conjunctiva of a sensitive individual produced any irritation; he behaved toward the toxin just like an individual not subject to hay fever. Unfortunately, the hypodermic administration of the antitoxin is as yet accompanied by very disagreeable drawbacks. "Although," admits Dunbar himself, "when so applied it produces no symptoms whatever in normal individuals, it yields when hypodermically used in hay-fever patients irritative phenomena which may have rather disagreeable effects. If, for instance, the antitoxin is injected into the forearm, a swelling arises, starting from the spot where the injection was made, which may extend over the whole forearm, accompanied by a sensation of heat, redness of the skin and disagreeable itching. These phenomena may last as long as six days." After a number of injections a sort of immunity against this local irritation seems to establish itself; the last injections are not as troublesome as the first. Moreover, not all hay-fever patients are equally subject to this distressing complication. It is not unlikely that it may be possible later to free the antitoxin from this irritating constituent. As the antitoxin grows stronger, the local irritation produced does not increase, but rather diminishes. Accordingly, there is good reason to suppose that it is not inherent in the antitoxin, but is an adventitious constituent and may eventually be removed without interfering with the activity of the serum.

For the present, however, the hypodermic use of the serum is not advisable. Applied locally during a paroxysm it often affords striking relief. The serum manufactured according to Prof. Dunbar's directions, has been put on the market under the name of *pollantin*. It is a clear, yellowish liquid. As furnished by the manufacturers, the package consists of a wooden box containing two glass vials; one tightly corked contains the serum, the other closed by a pipette-stopper is empty. The latter is furnished in order to avoid any unnecessary manipulation of the easily contaminated serum. When it is to be used a little of the serum is poured into the empty vial and thence drawn up into the pipette. Standing before a mirror a drop is allowed to fall into each eye, and then, throwing the head backward and inserting the pipette half an inch into the nostril, four or five drops are allowed to spread over the nasal mucous membrane on each side. According to Prof. Dunbar, a temporary but striking relief of all the symptoms results, the patients being perfectly comfortable for some five hours.

Sir Felix Semon, of London, and Dr. P. McBride, of Edinburgh, have repeated and to a certain extent corroborated these experiments. Their cases, combined, are eighteen in number, of which nine were hay-fever subjects and nine control patients suffering from other ailments. The patients were seen as often as necessary, and soon after the onset of a paroxysm were carefully treated, locally, with the serum. Those patients whose coryza or asthma was not due to hay fever were not benefited by the serum, while all true hay-fever patients were relieved more or less, some being entirely free from discomfort for seven hours or more, while others were only able to report a diminution in the severity of the attack. Sir Felix Semon, too, found that the hypodermic use of the serum was accompanied by so much local irritation as to make its use inadvisable. Emil Mayer, of New York, has also reported his observations with the serum. Patients suffering from the so-called "spring hay fever," prevalent in May, June and July, were promptly relieved by the serum. Indeed, he found that if his

patients applied the antitoxin to the nostril on arrising and again on leaving the house, they often remained free from the attack all day. The autumnal cases, suffering in August and September, were not benefited by the serum. It may be that these attacks are caused by a different pollen. It should not be difficult to identify this and to make an antitoxin to combat it. As yet no work along this line has been published. MacCoy, of Philadelphia, however, reports fifteen cases seen in July, August and September of this year, in all of which the paroxysm was cut short by Dunbar's antitoxin: "the effect was so promptly manifested, the relief so complete and the result so permanent for this season, that it appears really marvelous!" It is to be hoped that further observation will verify these results.

The question as to the relative value of the various anti-streptococcus sera has been much discussed during the past year but still remains undecided. Marmorek's serum, from the use of which very favorable results have been reported from all over the world, not only in erysipelas, angina, rheumatism or the like, but also in all sorts of mixed infections, has in the hands of other clinicians failed of any results whatever. Theoretically this serum is certainly open to criticism. A streptococcus culture is made continually more virulent for animals by passage through successive rabbits, and the final culture used for the immunization of horses. Now, Koch and Petruschky have shown that streptococci that have been made excessively pathogenic for rabbits are almost harmless for human beings, whereas streptococci from a recent case of erysipelas, while much less pathogenic for animals, are extremely so for human beings. Accordingly from the point of view of the latter, Marmorek's serum is derived from not a very virulent but rather from a feeble streptococcus culture. The two other streptococcus antitoxins of greatest vogue just now are those of Aronson and of Moser. Both of these observers have had very good results with their own antitoxins in their own clinics; elsewhere the good results have not been so striking. Baginsky, of Berlin, in particular, has not had good results with either serum in scarlatina, and advises against its use in this disease. In pure streptococcus infections, such as erysipelas, septicemia, etc., the serum is probably of some use. Just which serum is the best and just how useful it is, still remains to be decided. A better serum than any so far produced will probably appear before long.

The value of Adamkiewicz's "*cancroin*" treatment for inoperable cancer is no nearer solution than it was last year, when the matter was discussed in detail in these columns. Adamkiewicz has recently reported fifteen cases of inoperable cancer so treated, all of which were benefited, and three of which were cured. One of the former was a case of rectal cancer belonging to Engelberg. The latter protests against Adamkiewicz's statement, declaring that the patient was long since dead of general metastases and had not been benefited by the treatment. This makes one suspect the accuracy of Adamkiewicz's other reports. Hagentorn reports a case in which there was great temporary benefit from the use of cancroin, obstinate cancerous ulcers healing nicely during the treatment and breaking open again when the injections were discontinued. Ultimately this case, too, succumbed.

Some very interesting work has been done in regard to the rational treatment of Graves' disease. The theory on which these attempts are based is in brief that the function of the thyroid is to elaborate an internal secretion, in

itself toxic, whose function it is to neutralize another poison made elsewhere in the body. If, owing to inactivity of the thyroid, the latter poison is in excess, we have the condition known as myxedema; if, owing to absence of this poison, or to excessive activity of the thyroid gland the thyroid secretion is present in excess, we have Graves' disease. Efforts have accordingly been made to treat the disease, not by modifying the action of the thyroid gland, but by providing more of this unknown substance for the gland to neutralize. Ballet and Enriquez injected the blood serum of dogs whose thyroids had been removed some time before, and whose blood, therefore, would be rich in the substance which it is the function of the thyroid to neutralize. Burghardt injected into his patients suffering from Graves' disease a saline extract of the blood of myxedematous individuals. Moebius advocates the hypodermic use of a serum (made by Merck) obtained from thyroidectomied sheep, while Lang advises drinking the milk of thyroidectomied goats. A powder made of this milk, dried, has recently been put upon the market under the name of *rodagen*. A number of cases have been reported treated by these various methods, usually with moderate benefit. Thus Schultes reports a case of Graves' disease with a violent psychosis. It was treated by injections of Moebius' serum. The psychosis disappeared at once; in a few weeks the struma had shrunk 2 cm. in circumference and the pulse had fallen from 140 to 80–90. Burghardt reports fifteen cases treated, some with Moebius' serum, some with rodagen. The results on the whole were satisfactory. In every case the insomnia, emaciation, tremor and sweating were relieved. In two cases the exophthalmus vanished. The size of the gland was usually unaffected, though in all cases the gland grew softer. Considering the extreme variability of this disease and its tendency to spontaneous temporary improvement, these results cannot be said to speak unmistakably for the specificity of this treatment.

A large number of new synthetic drugs have been put upon the market during the past twelve months. Some of them will doubtless prove useful and so survive; the bulk will probably pass into a quick oblivion. It is as yet too early to express any opinion concerning these newest arrivals in the therapeutic field. Of the drugs that have appeared within the last few years several are proving of great value and are eliciting general endorsement. Of these, one of the most striking is *theocin*, which has been referred to a number of times in these columns, and which unquestionably is our most powerful and most certain diuretic. It is a white crystalline powder, easily soluble in hot water; not so soluble in cold. It is, chemically, isomerous with urotropin, which it closely resembles in its mode of action. While more expensive per ounce than urotropin, the dose is so much smaller (0.5 to 1.0 gram daily) that the actual expense to the patient is considerably less. Its chief merit lies in its rapid and powerful action; a single dose will usually produce a profuse polyuria and often causes an edema to disappear over night. It will still produce a diuresis when digitalis, diuretin, caffein and the like fail, whether on account of having been given too long or of renal insufficiency. On the other hand, its diuretic effect does not last quite as long as that of diuretin, and it does not act as a cardiac tonic like caffein and digitalis. Its most striking effect is seen in cardiac dropsy in combination with a heart tonic. In the various forms of chronic nephritis it is less efficient; in ascites, due to hepatic cirrhosis, its results are still less marked, and in the dropsy of acute nephritis, or of tubercular peritonitis, it is practically

inert. It is best given in a cup of hot tea or other hot fluid. When given as a powder or in a capsule it acts as a gastric irritant and often causes considerable trouble. It should also never be given on an empty stomach. When there is gastric intolerance of it, it may be given per rectum; but thereby its efficiency is much reduced, and in such cases it is better to give some other diuretic. Occasionally it has been known to act as a nervous irritant, producing insomnia, paresthesias and the like. A number of observers have even seen epileptoid convulsions following the administration of the ordinary dose of theocin in patients without any cerebral trouble. No permanent ill effects have been recorded even in these individuals, but the complication is, to say the least, unpleasant. It may be avoided by combining with the theocin some depresso-motor. Thus Stross advises the addition of two to three per cent of extract of belladonna to each dose of the drug. Schlesinger advocates the following formula:

℞ Infus. adonid. vernalis ..... 5.0 ad 180.0
Theocini ..... 0.6 (up to 1.0)
Syr. simpl 20.0
M. Sig.—The entire quantity to be taken in the course of the day.

In a recent number of this journal an account was given of the strikingly good results obtained in cases of angina pectoris by the protracted use of urotropin. Pineles has shown that theocin has a similar action. It is best given as follows: for three successive days the patient takes 0.2 gram after breakfast; for several days thereafter no theocin is taken, until stenocardiac symptoms again show themselves, whereupon the drug is again given for three days. Taken in this way the drug keeps patients comfortable who had previously been intractable and constant sufferers. It has two advantages over urotropin: the small dose necessary makes it cheaper, and the same reason makes it less of a gastric irritant. Like urotropin, its action in stenocardia is, of course, only palliative.

The very extraordinary substance called radium promises rich discoveries in medicine as well as in physics. Its powerful action on diseased even more than on healthy tissues has been known for some time. MacIntyre reports three cases of lupus that were subjected to the rays emanating from a particle of radium chloride. Both healed very promptly. One of them had been exposed to the Finsen rays without any benefit. Whether in these cases radium behaved like any other escharotic, affecting the lupus, as a tissue of lessened resistance, more intensely than the healthy skin, or whether it had a true curative action, still remains unsettled. During the coming year we shall probably hear more of the therapeutic value of this substance. In spite of its excessive cost it will be, if of any efficacy, our most economical therapeutic agent, since it is apparently inexhaustible and can be used indefinitely without waste.

From all sides reports continue to pour in of diseases otherwise intractable being cured by means of the x-rays. While a skeptical attitude towards these reports has as yet a certain amount of justification, it cannot be denied that some of the claims of the x-ray enthusiasts are well founded. It seems to be certain that superficial cancers can be materially benefited and sometimes permanently cured by the skillful application of the x-rays. Even more deeply seated tumors have been known to be favorably modified, at least for a time. Sarcoma seems to be much less amenable to this form of treatment than car-

cinoma. In 36 cases of round and spindle-celled sarcoma treated by exposure to the rays, Coley obtained but slight and temporary benefit in most cases, although in a few, apparently permanent cures resulted. Even where the primary tumor disappeared under the action of the x-rays, metastases in most cases eventually appeared elsewhere. His conclusion is that the use in sarcoma of the x-rays is proper only in inoperable and otherwise hopeless cases. The only exception that he makes to this rule is in sarcoma of the extremities, where operation means amputation. Here the x-rays may be given a trial, but if not promptly effective, operation should not be delayed. They may also be of use, after operation, to prevent recurrence. The statement of Senn, whose material is certainly not small, is of interest here. He says that he has never seen either carcinoma or sarcoma even benefited by x-ray treatment, to say nothing of a cure. Several cases of Hodgkin's disease have been reported cured by the x-rays, two of them reported last April by Senn. In August last the same observer reported a case of spleno-medullary leukemia successfully treated by this means. The patient was a Jewess of twenty-nine years, with greatly enlarged liver and spleen. The blood count showed 3,500,000 red corpuscles and 64,800 white cells. Many of the latter were myelocytes; there were many eosinophiles, and poikilocytosis was pronounced. The x-rays were applied to the region of the spleen, the lower end of the sternum and the epiphyseal extremities of the long bones. The exposures were made daily for from ten to twenty minutes. Three weeks after the treatment was begun a marked decrease in the size of the spleen was noted, and it is stated (although the figures are not given) that the improvement in the blood kept pace with the diminution in size of the spleen, so that very soon only a few eosinophiles and no myelocytes were found. Two months later, except for a slight anemia, the blood was normal. Unfortunately, the case is so inadequately reported that even the diagnosis of leukemia is not beyond question, and the curability of this disease by means of the x-rays must be left for further observation.

New hypnotics that are at once harmless and efficient are always welcome. There are cases where all attempts at inducing sleep by means of physical therapeutics fail and where we are compelled to have recourse to drugs. Under such circumstances it is of importance to have at our disposal a large number of such medicaments in order that we may not be balked by individual idiosyncrasies, and that where hypnotics must be given continuously for some time we may be enabled to give first one, and then another. Two new hypnotics that are finding much favor are *veronal* and *hedonal*. Both belong to the urethan group, and are similar in their action to the well-known trional. Veronal produces a sleep less profound than most hypnotics, the condition resembling closely that of a natural slumber. It fails entirely where there is any organic cause, such as pain or dyspnea, tending to keep the patient awake. For ordinary nervous sleeplessness it is surpassed only by physical methods, such as the prolonged warm bath, the cold wet pack and the like, and is invaluable where these fail. The usual dose is 0.5 to 1.0 gram. In delirium tremens, where it is often useful, the dose is 2 to 3 grams. Hedonal is given in somewhat larger doses, 2 grams being the amount advised for men, while women are said to require only 1.5 grams. Its action closely resembles that of veronal, in that it produces a quiet, natural sleep It is also slightly a cardiac stimulant and decidedly a diuretic, so that it is especially indicated in cardiac disease. It is not cumulative, and is non-toxic in any

reasonable dose. Being very poorly soluble, it is best given in a wafer; no gastric irritation need be feared.

Several years ago the Parisian dermatologist Brocq called attention to the antifurunculous action of brewers' yeast. He gave it internally in a large number of cases of furunculosis, and found that it frequently aborted the attack, rendering the resort to the knife unnecessary. Coutourier some years later met with unfavorable results, due probably to his having a poor quality of yeast. In 1896 Buchner and Heer advocated its use warmly, and since that time its value as a medicament has been generally acknowledged. The drawbacks inherent in brewers' yeast as a medicament are, however, many. Not only is it difficult to obtain yeast of good quality, but it has been found that within twenty-four hours the yeast spoils and becomes inert. It is bulky and its taste is to some people absolutely nauseous. Various attempts have been made to obviate these disadvantages. The fermentative power of the yeast is not inherent in the yeast cell, but is a zymase or ferment that may be extracted in various ways. These yeast extracts, known as *levuretin*, *cerevisine*, *acetone-yeast*, etc., differ greatly among themselves, some being active fermentors of grape sugar, others not. Which of them best deserve the confidence of the profession has not yet been established beyond question; probably none of them are quite as efficient as the original brewers' yeast. The chief indications of yeast, at present, are:

1. Diabetes Mellitus.—Here it not only acts as a food and assists digestion, but by fermenting away the sugar in the intestinal tract, before it can be absorbed, enables us to give the patient considerable quantities of sugar and starch in his food with the certainty that but little of it will be taken up into the system.
2. Furunculosis.
3. Chronic eczema and dermatoses in general.

Of new proprietary iron tonics there is no end. Jaworski maintains that the natural water from chalybeate springs surpasses in efficiency all of our vaunted organic preparations. Unfortunately, this water does not keep well and so cannot be exported. After a few days a red sediment precipitates in the bottles and the value of the water is destroyed. He believes however that the natural chalybeate water can be closely imitated by the following formula:

℞ Ferri sulfurici recenter parati 2.5 5.0
Solve in aq. dest. fervid ..... 10.0 or 20.0
Deinde adde:
Syrupi simplicis 100.0 100.0
M. Sig.—Put one teaspoonful into a glass, fill up with Vichy and drink at once.

PATHOLOGY AND BACTERIOLOGY.

IN CHARGE OF

CARL FISCH, M. D.

Among the few references that can be made to the more important work presented during the last year in the wide field of biology, pathology and bacteriology, must stand in the foreground the advance gained in our knowledge of the intimate nature of the mysterious phenomena of immunity and many other processes that through Ehrlich's work have come to play such a prominent role in our biologic and pathologic conceptions. A great mass of single investigations have again and again shown that in the most diversified features of animal and also vegetable life the principles established by this author obtain; they have helped to accumulate material enough to form a basis for the understanding of the nature of the reactions that in all of these processes must be the same. While certain observations not readily agreeing with the law of constant proportions were by ingenious methods seemingly adapted to it, the investigations of several workers have established that they give the key to the true nature of the combination of toxin with antitoxin, of receptor with amboceptor. We now know through Madsen, Arrhenius, Gruber and others that this combination is not one of constant proportions, such as between simple chemical substances, but that it is dependent upon the relative concentration of the uniting substances. The physico-chemical laws for the solutions of dissociable substances are those of the immunity-reactions, a fact that at least has dispelled any possible objection against the chemical character of the latter. As to their theoretic conception, this revolution will do away with the apparent simplicity of the reactions concerned, but it will do away, too, with the obscure and superficial comparison of their nature to merely physical phenomena, like that of absorption or adsorption; Bordet himself, the promulgator of this theory, has recanted his former assertions in this direction. The consequences that this better knowledge will have on the development of the study of receptor-antibody reactions can hardly be foretold, but the fact that it can be positively demonstrated that these substances exacting their qualities in incredibly minute proportions (sometimes 1 to 1,000,000), and nevertheless following distinctly the laws for other chemical combinations, will in the future certainly clear up the mysterious character of ferments and show their analogous mode of action. Results in this direction have already been obtained, as demonstrated in the studies published by Delezenne and Pawlow, showing the composite nature of the proteolytic action of trypsin. A very beautiful confirmation of this exposition was also only lately given by Cohnheim's investigation on the pancreatic ferment that presides over the destruction of sugar in the animal organism. It was long known that muscle-fibres have a decided power of glycolysis, but in spite of all attempts no observer had succeeded to demonstrate an enzym exerting this action. At the same time it was known that the removal of the pancreatic secretion from the organism invariably led to the loss of the ability to destroy sugar; the demonstration of an enzym for this quality so far was not possible. Cohnheim found that each, the muscle and the pancreas, are the producers of substances that only in combina-

tion with each other lead to glycolysis, showing that a relation obtains here, as we have learned that it exists also between the proteolytic proenzym of the pancreas and the enterokinase of the intestine. Further investigations will show that this relation is the same as that between the amboceptor and complement in the immunity-bodies; for the trypsin this demonstration has, by this time, been made.

The positive demonstration of such processes occurring in the same individual, processes of essential importance for the existence of the individual, make it not only probable, but certain that they will be found also governing the other functions of cellular life. Autolysis has been studied under different pathologic and normal conditions, the most instructive one being that of the resolution of the exudate in croupous pneumonia that is effected by a proteolytic ferment excreted for this purpose. The conclusion must be that under normal or pathologic conditions the animal organism everywhere and always produces substances acting as immunity-bodies, and either essential for the sustenance of the normal metabolism or protecting against deleterious influences.

The one question that is not solved yet is the cause of the specificity of all of these reactions, a question that Gruber especially has altogether neglected in his discussion about Ehrlich's views. Our absolute ignorance about the chemical structure of the most important substances of the cellular body is a great obstacle for arriving at definite ideas. But let us remember that we have to deal here with a much greater complexity than, for instance, in carbohydrates, which in a similar way are acted upon by enzyms, a fact that has been shown positively by Emil Fischer; a solution of the riddle is to be hoped for by the progressing study of the chemical constitution of the protein-bodies; great strides have been made in this direction lately by the work of Fischer, Kossel and others.

Welch has given an impetus to a side of this question that was not altogether neglected, but forced to the background by the practical interest of mankind. Since the fight between the micro-organism and the animal body is decided only by the greater resistance of the one or the other, it was natural to inquire what biologic changes the microbiotic aggressor might undergo in this fight. The question has been considered before, but since Welch's publication, several investigations have been published demonstrating that the defensive power of the microbe can be artificially increased in the same varied way as we see it in the animal body. One of the most interesting and instructive instances is that given by Theo. Mueller in regard to typhoid bacilli. Mueller found that when cultivating these bacilli continuously in typhoid-immune-serum they lose their quality of being agglutinated by immune-serum, just as the blood-corpuscles of rabbits lose their quality of being destroyed by the toxic factor of eel-serum, when the animals have been immunized against this toxin. It is a splendid proof for Ehrlich's explanation of this remarkable effect.

There is only one conclusion to be drawn from the modern aspect of immunity-reactions that is of practical importance; it is that a complete neutralization of a toxin by an antitoxin is not possible; in any mixture of the two, free portions of these substances must be present. The amount of the one or the other of them depends only upon their relative concentration, so that the quantity of free toxin can be reduced to a minimum not fatal by a great surplus of antitoxin. In this way the dissociation of the product of union of these two substances can be reduced to such a degree that the remaining portion of toxin falls

below the fatal or symptom-producing quantity. For antitoxin-therapy this means the use of doses of antitoxin as large as possible.

Space does not allow me to enter into a more detailed review of what has been done in this line. We must conclude with the remark that although the original conception of the principles of the immunity theory will have to be greatly modified, its basis is more than ever firmly built, and it is certain that its influence on general biologic and pathologic study is as yet far from its end. It will remodel to a great degree many of our ideas about the life of the cell and of the multicellular organism.

Purely a pathologic one is the consideration of the subject of tuberculosis, about which, more than ever before, the battle is waging. The last year has not had a tendency to lead to a reconciliation of the divergent opinions. Divergent they are on any part of the tuberculosis question. To begin with the way of infection, Behring has renegated the idea of an inhalation tuberculosis in opposition to Koch and Cornet, who believe in the direct reception of the virus into the respiratory tract as the main factor. Behring bases his assertions on experiments and histologic observations on the mucosal lining of the gastro-intestinal tract of young animals and human infants. He maintains that during the earliest time of life the mucosa is in a condition to allow foreign substances, among them bacilli, to penetrate, while its structure in later periods is protective against such an invasion. In other words, he believes that the primary infection occurs always during the first year of life, remaining dormant and becoming active only at any time of the further existence, as soon as the necessary conditions obtain. While there is no doubt that the primary infection in most cases certainly has occurred a long time before the first clinical symptoms are recognized, such a sweeping assertion is surely not justified in view of the general experience on infection during later life. Other points of pathologic character directly contradict Behring.

But this view of the author leads us to the main problem that was brought forward two years ago by Koch in his announcement of the diversity of the bovine and human tubercle bacilli. Behring openly contradicts Koch, proclaiming the identity of these two pathogenic microbes. The material on which his assertion is based is not sufficient to allow of admitting it as corroborative of his theory of the primary infection. Infants are infected, he says, not only by tuberculous material derived from their surroundings, but mainly by the milk they are fed on; and since the cow's milk contains, in seventy-five out of one hundred cases, bovine tubercle bacilli, this is the most prolific source of infection. If both assertions were facts, Behring would be correct. But unfortunately neither the one nor the other is a scientific truth. The very fact that just now hundreds of workers are attempting to definitely solve the problem of the identity of the two bacilli, shows how little this question is settled, and how impossible it is to base far reaching conclusions on the one or the other side. All over the world the last year careful experiments and observations have been made, and it must be said that the greater weight of evidence has fallen into the scale of Koch's opinion, as far as observations are concerned, that in their interpretation comply with the claims of a scientific criticism. One of the most important contributions to the question has been furnished by Kossel, who failed to cause tuberculosis in the great majority of cases by injecting into calves and young cows the cultures of tubercle bacilli obtained from human tuberculosis.

Of thirty-seven different cultures, only four caused general tuberculosis, while in none of the other were any but local lesions produced. The four infectious cultures were obtained from lesions, healed and encapsulated, and playing no part in the cause of death of the individual that furnished them, This series of experiments must be held up against isolated experiences, reported by some observers, that appear contradictory. In most of them certain sources of error are not excluded that may have vitiated the result.

This obtains specially in all of those instances where it seemed that a pulmonary tuberculosis was the consequence of a local lesion obtained in the handling of material of bovine tuberculosis. Ravenel has reported such cases as proofs for the infectiousness for man of bovine bacilli. How, in these cases, the connection between the two factors can be established, where every one of them was liable to develop pulmonary tuberculosis from a latent focus, is not clear, and this is the ground that Koch has excluded all such reports from the consideration *pro et contra*. Very important material has been brought together about this point by the statistics on primary intestinal tuberculosis in children, which with only one or two exceptions show the uniformly exceeding rarity of this condition, which, in the first place, could lead to the suspicion of infection by milk from tuberculous cows. It cannot be foretold what the final answer to this important question will be at the present date; however, it must be clearly stated that the gross evidence is in favor of the harmlessness of bovine bacilli for the human race, which, of course, does not exclude that exceptionally the human organism can be invaded by them.

The better insight into the pathologic peculiarities of pulmonary tuberculosis have led to a beginning of the era where the wholesale efforts to exterminate tuberculosis by supervision, sanitaria, etc., begin to be looked at with a somewhat doubtful glance. That this is possible, we owe to the knowledge gained, that tuberculosis itself is not the fearful thing we deem it, but that only certain conditions make it fearful. Prevention of tuberculosis will not be achieved by treating patients for a few months in sanitaria, but only by putting them under conditions where the infection can be suppressed, and at a time when we have to deal only with tuberculosis, and not with consumption. This is the opinion of Koch and Behring. The means to recognize this time we have given by the tuberculin test, and it is one of the most welcome gifts of the last year, that the number of observers has greatly increased, who unrestrictedly admit the value of this method.

Our future work in regard to tuberculosis will, however, not lie in influencing it when it is there, but to prevent it altogether; and the last year has brought in the publication of Maragliano and Behring material that shows that after a shorter or longer period of waiting we will see this end accomplished. We will have a vaccination against tuberculosis, like we already have it for the bovine form of the disease; for this the proofs published are conclusive and incontradictible. Means will be found to circumvent the impossibility of directly finding the best form of vaccination by experiments on human beings. This is, at the present time, the only obstacle to a speedy solution of the problem.

Pathology and bacteriology have worked assiduously together to bring about this modern view on conditions that practically are the most important. It is their practical side that led us to give them so much space in this review. This does not mean, however, that in no other way progress was made in the two

branches of biologic science, although only in a few respects this progress may be of general interest.

Of pathologic processes the so-called fatty degeneration has received much attention, the accumulation of fat in cells under pathologic conditions. Since Virchow we have been in the habit of considering fat deposition in cells as an indication of degenerative processes in the protoplasm, leading to the formation of fat from the protoplasmic material. This view is even now maintained by physiologic chemistry on the basis of investigations on the totality of tissues, but not on the single cell. To the histologist fatty degeneration has always appeared more as a deposition of fat than as a formation of it. Ribbert has always been the foremost defender of the conception that the fat found in cells under pathologic conditions has not been formed there, but was brought to the cells by the fluids of the body and deposited, the cells, owing to their diseased condition, not being able to assimilate it. They have still the quality to build up fat from its constituents carried to them, but their ability ends there. This leads to the storing of an amount of fat in a single cell that far exceeds the possible quantity obtainable by the conversion of its whole protoplasm into fat. Ribbert and others have shown that diseased tissue, from which the circulation is cut off, never forms fat, and in an instructive paper in Virchow's *Archiv.* this point is illustrated by the study of kidney-infarcts, where the whole infarct does not contain a trace of fat, while only the peripheral zone of hyperdemia allows to demonstrate the presence of it. That in many organs (kidney for instance) the amount of fat in fatty degeneration does not exceed the amount found in any normal kidney, and that its apparent accumulation in the epithelial cells is only due to a different distribution of the fat of the same organ, has likewise been brought out by Ribbert. Histologically, a fatty degeneration of the protoplasm is not observed, and the appearance of fat in any tissue is always an infiltration or deposition, in some organs (fat-tissue, liver) to a degree physiologic, in others pathologic, due to a disturbance of the life of their cells. A number of other contributions to this subject lead to the same conclusion: a fatty degeneration does not exist.

As to the pathology of tumors, nothing of great importance has been found. An exception form the classes of embryoid tumors (teratomata, dermoids, etc.), that by the classic work of Schlagenhauffer on chorion epitheliomata in testicle-teratomata have been given the conclusive testimony of being formations arising from segregation of cells in the very first stages of the division of the fertilized ovum. His observations have been confirmed by Pick and others. That many of the malignant tumors of homogeneous structure are most likely of the same origin, an opinion already pronounced by Wilms is very probable. As to the origin of carcinoma the search for parasites has gradually tired out; the several cancer laboratories and societies for carcinoma investigation have not brought out a single point worth mentioning. On the other side, control investigations of so-called parasitic organisms in cancer have again, always and uniformly, established the fact that the parasites are products of protoplasmic or nuclear degeneration or products of the secretory organs of the cancer cells. That cancer may arise from normally organized epithelial cells is beautifully demonstrated by Hauser in a number of polypoid growths of the intestine, a contradiction to the theory of Ribbert of the necessary dislocation of epithelial cells.

The histology of inflammation and of inflammatory products has been en-

riched by Maximow, Pappenheim and others by a great amount of detail work, but the discussion of the origin of the different cells found in inflamed tissue has not come to a decision. One point, however, begins to impress itself more and more distinctly, that is the impossibility of retaining the theory of Ehrlich, based on the assumed lack of motility of lymphocytic elements. Wolff, Michaelis and others have directly demonstrated the latter, while years before Baumgarten had insisted of the migration of these cells through the walls of the capillaries. It is generally accepted that the exudative products are not only polynuclear cells and blood corpuscles, but that to them, too, belong the lymphocytes. The great question discussed is what becomes of the latter, while all of the former either return into the circulation or are destroyed *in loco*. Maximow at first asserted that they participated in the formation of connective tissue, later he revoked this opinion. The difficulty lies in the fact that cells of inflammatory tissue are so different from those of mature tissue that we can only by comparison or by attention to certain staining reactions attempt to establish their identity. This, of course, involves the factor of the personal equation of each observer; to which degree this may go is shown by the publications of Pappenheim, who differentiates the blood and tissue-lymphocytes as two classes of cells altogether independent from each other and having a different course of formation in the building up of the body. So far the evidence points more to the character of the round cells as an infiltration (including the plasma cells) than to that of an exudative product; there is as yet no direct proof that these cells can become tissue builders.

That the hematologic doctrine followed so long must undergo reconstructive changes in consequence of these studies is clear. In fact, the material accumulated everywhere, especially in regard to mixed forms of lymphatic and myelogenous leukemia, will not allow us to adhere to the old ideas of different seats of the leucocyte and lymphocyte formation. In this respect the most interesting contribution has been made by Leube, who describes a blood picture combining the types of leukemia and of pernicious anemia, and introduced for it the name of leukanemia. As to the histology of the blood, only the blood-platelets may be mentioned, to state that gradually their designation as third corpuscular element of the blood has been eliminated. The great impetus was given by Deetjen's experiments; control investigations have definitely shown that other than vital qualities produced the appearance of motility and of multiplication of these bodies. They are now generally believed to be nothing but products of retrogressive changes of the red corpuscles.

Of special pathologic conditions, the abdominal fat necrosis has received a great deal of work. After it was established by Oser, Flexner and others that any lesion, chemical or traumatic in nature, that leads to a focus of destruction of pancreatic tissue, may cause fat necrosis, the question remained unanswered: why this lesion, often occurring, and resulting merely in an indurative pancreatitis, under circumstances can become rapidly fatal and form what is called the pancreas-stroke? Hess has found that if fat is introduced into the pancreatic duct, such a fatal necrosis can be produced. He reasons that the fat is immediately decomposed, and that the fatty acids in combination with sodium cause a necrosis of the peri- and intrapancreatic fat tissue; the products of this necrosis secondarily attack the pancreas tissue proper and surrounding tissues. Soaps being exceedingly toxic, and it being probable that some of these compounds

enter into the circulation, he accounts for the profound symptoms of intoxication found in the cases of fatal fat necrosis. Other investigations will have to show whether this explanation is correct.

The main interest of bacteriology has been lying between the questions of the immunity-reactions and the tuberculosis problem, about which some remarks have been made. The problems of the bacillus of dysentery have led to the discovery that the original conception of an ubiquitous-everywhere-identical bacillus is not correct. It is certain now that the dysenteric epidemics in different countries or zones are due to bacilli very nearly related to each other, but nevertheless different, and especially different in their biologic qualities. Our American form differs from that found by Kruse and Shiga to a degree that we cannot speak of an identity. Lately publications have been made that bid fair to show that even in the same location such different forms can give the same clinical picture, a point that is important in view of the enthusiasm aroused by the discovery of Duval and Basset, that in summer diarrhea the infant's blood agglutinates the bacilli. As to this agglutination, the same must be said as about the agglutination of typhoid. Owing to the circumstance that for very perspicuous reasons the reliability of the Widal reaction appears great enough to allow of conclusions as to its diagnostic value, the method after which it is applied appears to be sufficient, and, besides that, theoretically correct. That this is a mistake, and that 90 out of 100 agglutination tests made for clinical purposes are theoretically not correct and can, therefore, not be conclusive as a diagnostic means, is a certainty.

It is the merit of Stern to show up this error, and to insist on a more exact procedure. His work is only the condensation of an immense amount of work done by numerous authors on the nature of agglutination and of the demonstration that different bacilli can be agglutinated by the same serum. A conclusive proof of the existence of a typhoid infection can only be brought by finding the degree of the agglutinating quality and by comparing it with the same quality of other bacilli. That in so many cases clinical and serum-diagnosis agree is, therefore, not a proof for the reliability of the serum-test in the way it is used. The attempts of producing curative antidysenteric serum are continued; that their results will be the same as those obtained in typhoid, cholera and other diseases is, *a priori*, certain. That only under a very rare coincidence of conditions an anti-bacterial serum may become curative, we know. For curing an infectious disease we need antitoxic sera. Toxins, like the diphtheria or tetanus toxin, we do not know so far in typhoid, dysentery, etc.

A great step forward in this line has been made by McFadyen, who succeeded in obtaining toxic substances from typhoid and other bacteria by triturating them and then extracting by high pressure their intracellular fluids. In this way fluids were produced of high toxicity, and the few experiments published so far, that were made by immunizing animals with these fluids, show that an antitoxic quality of the resulting serum can be hoped for. It is very likely that this new issue in dealing with intracellular toxins will prove of wide influence on serotherapy.

Other work is of too specific character to be alluded to here. We may, however, shortly refer to some researches that, although not bacteriologic, but parasitologic, have proved of exceedingly great interest and importance. In the first place must be mentioned the investigation of the etiology of a number of

tropical diseases to which murderous endemic pests among cattle, horses and other animals belong, and to which very recently a very mysterious disease, the sleeping sickness in man, has been added. The causation of these diseases by a flagellate organism has been carried on in every civilized country; in most cases, the mode of transmission has been found to be given by blood-sucking insects. As a result, that will be an immense stimulus to the study of protozoa, must be named the work of Novy, who found for the first time a method to cultivate as a pure growth, a protozoon, a trypanosoma living in the blood of the wild rat.

Our knowledge of malaria has received only small additions to what so richly has accumulated during the previous years. The one thing worth referring to is the result that Koch has obtained by applying his method of malaria extermination on a large scale on many thousands of people in malaria-infected areas. His theory, that malaria can be comparatively easily and cheaply exterminated by a thorough and rational treatment of all individuals carrying parasites in their blood, has proved true in his experiments, that were made under the most diversified conditions of climate and character of the population.

After the classic work of Reed and Carroll on yellow fever nothing of importance has developed for this disease. It may be well to mention, that seemingly a new factor of a never-before-experienced complexity bade fair to be taken up into the cycle of the development of the yellow-fever virus. While the two authors named had incontrovertibly proved that the organism causing the disease passed porcelain-filters, and that it must with our optical means remain invisible or at least undifferentiable, the *Working Party* of the Marine Hospital Service discovered in Central America that the transmitter of the disease (the stegomyia fasciata) was always infected by a protozoon, going through a cycle of development while within the mosquito, not unlike that of the malaria-parasite in anopheles, and that only mosquitoes thus infected would produce by their bite the disease in man. The report was beguiling and necessitated peculiar assumptions to reconcile its meaning with the findings of Reed and Carroll. Unfortunately or fortunately, the observers of the Working Party were only inexperienced enthusiasts and mistook a parasitic yeast cell, introduced into the stomach of mosquitoes with bananas fed to them, for a certain stage of their parasite. The other stages were furnished by their imagination and by the insufficient methods they used in preparing their material. It is again Reed, who has established these facts. The organism of yellow fever is still unseen, but not altogether unknown.

GYNECOLOGY AND OBSTETRICS.

IN CHARGE OF

HUGO EHRENFEST, M. D.

At the New Orleans meeting of the American Medical Association the program of the section on obstetrics and gynecology contained two papers on obstetrical subjects, fifteen on gynecological subjects, and four papers on topics that had no relation to either obstetrics or gynecology. A resolution was offered suggesting a division of the program at future meetings more evenly between gynecological and obstetrical subjects. The resolution, however, was laid on the table indefinitely, this action being more or less due to the influence of one well-known gynecologist, who declared most emphatically that obstetrics was a well-rounded science and that at the present time no work of any importance was being done in this branch of medicine. We trust that the gentleman has followed the literature of the past year and by this time has changed his opinion.

I think that excellent contributions on obstetrical and embryological questions hold a leading place in the medical literature of 1903. For the first time in many years the obstetrical papers, so far as quality is concerned, outweigh considerably the gynecological literature. Of more than common interest are a number of contributions on the physiology of the sexual system.

It is well known that the ovaries serve some other purpose besides discharging ova at more or less regular intervals. The marked effect of the removal of both ovaries upon the further development and the function of the other genital organs and upon metabolism, and the possibility of preventing these effects by the transplantation of ovarian tissue, or by feeding certain substances extracted from ovaries, have proved beyond doubt that the ovaries produce some substance that is of integral importance for the normal function of the genital apparatus in the female. During the last few years the internal secretion of the ovaries has been the object of much speculation and investigation. Fraenkel's classical essay on this vexed problem, probably one of the most important contributions of the last year's literature, is a resume of a long series of observations and of the results of most interesting experiments made upon animals, which tend to prove that the production of this potent secretion of the ovary is confined to the corpus luteum. *The corpus luteum is a gland formed in the human female for a four weeks' function.* Fraenkel's contention that the corpus luteum is a gland has received of late very powerful support by the investigations of Franz Cohn in the "Histology and Histogenesis of the Corpus Luteum and the Interstitial Ovarian Tissues." This author found in the various stages through which the corpus luteum passes in the course of its development, all the changes characteristic of secreting glands.

In the literature we find the records of several cases in which after the extirpation of but one ovary menstruation disappeared for some time. Lindenthal sees in this phenomenon a proof of the influence the corpus luteum exerts upon the course of menstruation. He thinks that the extirpated ovary must have contained the one corpus luteum that would have produced the next menstruation.

The important role that the ovaries and testicles play in the growth and function of the rest of the genital apparatus has prompted the belief that their

existence is indispensable to the formation of the genital system in embryonic life. Halban shows convincingly the fallacy of this conception. Sex is determined at the very beginning of embryonic life. We are, however, still lacking the methods of distinguishing the sex in this early stage of development. The ovaries and testicles control not the formation but only the later development of the sexual apparatus, or, as Halban expresses it, they exert a "protective" but not a "formative" influence. Even the "secondary characteristics of sex" (as development of breasts, change of voice, etc.), may make their appearance in case of congenital absence of either ovaries or testicles. Very similar ideas were expressed in a very valuable paper by Hegar.

Lenhossek discusses all the various theories that have been advanced concerning the determination of sex in the embryo. The only conclusion he can draw from a critical review of numerous hypotheses is that the sex is determined in the very moment in which the life of the embryo begins. He thinks it very probable that the unfertilized ovum already contains the properties which decide the sex and that the spermatozoon has no influence. B. S. Schultze supports Lenhossek.

Schuecking succeeded in separating from the ovum a substance which has an agglutinating effect upon the spermatozoa. In his opinion, fertilization effects the development of the ovum by starting a free absorption of fluids from the surrounding tissues. The main factor determining the sex of the embryo is not the nucleus but the protoplasm of the ovum. The "male ova" contains more protoplasm and need a larger amount of resorbed fluids for their further development.

Iwanoff obtained splendid results in artificial insemination of mares. He used a suspension of spermatozoids in normal salt solution or in a slightly alkaline solution. These experiments are of the greatest practical importance and scientific interest. Among other things, they prove that the prostatic secretion cannot any longer be considered an essential constituent of the seminal fluid.

Scholten and Veit bring new experimental proof for their contention that by means of the injection of placental tissue syncytiolysins can be produced while the hemolytic properties of the serum remain unchanged. Liepman, by the injection of placental tissue into rabbits, succeeded in producing a serum that showed a specific reaction for human placental extract by formation of a precipitate. Opitz and Weichardt deny the convincingness of Liepman's experiments, although they believe with him that by a dissolution of placental tissue placentolysins are formed in the blood, which may act as toxins. Under normal conditions these toxins are neutralized and made inactive by the formation of antitoxins, but in case of disturbance in this process of neutralization, the toxins produce eclampsia. These authors are at present occupied in producing a serum for the treatment of eclampsia. Boehm thinks that these toxins produced by the dissolution of chorionic elements in the maternal blood are the cause of hyperemesis gravidarum. Veit alludes to the probability of a connection between the deportation of chorionic villi into the maternal blood and the nutrition of the fetus. A hemolysin of the chorionic epithelia dissolves maternal hemoglobin which in this form is transmitted to the fetus. On the other hand, certain products of the fetal metabolism are carried into the maternal system by way of the chorionic epithelia which are dissolved by syncytiolysins formed by the action of the maternal erythrocytes.

Zangenmeister re-establishes the old theory that the blood of the pregnant woman is in an hydremic condition. The serum of the pregnant woman shows the following characteristics: its specific gravity and its molecular concentration are less than normal, it contains less albuminous substances but more colloids than the blood of a non-pregnant woman. From the fact that the relative number of the red blood cells is about normal, the conclusion must be drawn that their absolute number must be considerably increased during pregnancy.

In another paper, Zangenmeister and Meissl bring a biochemic proof for the theory that the fetus, at least during the last four months, voids constantly a certain amount of urine into the amniotic fluid. They base their conclusion upon the results of a most laborious examination of the amniotic fluid and of the blood serum of both mother and fetus as regards the chemical constituents and their respective freezing points.

During the course of acute infectious diseases there often occur uterine hemorrhages. According to Stravosciadis these hemorrhages are due to infection of the endometrium with the specific bacterium which causes the general infection. The infection is carried to the uterus through the circulatory system, and it seems that pregnancy and the puerperal stage are especially favorable for this mode of propagation. Premature interruption of pregnancy in the course of acute infectious diseases is, in the author's opinion, often due to such an infection of the uterus producing an acute endometritis.

A very elaborate essay by Fellner deals with a question that is of interest to every general practitioner: Which diseases contraindicate marriage or a new impregnation? The general principle is laid down that every disease that shows a mortality higher than ten per cent. should be considered as an absolute contraindication against taking the risks of pregnancy. Seventy different diseases are considered in detal. This very valuable contribution closes with the following three suggestions for the physician who may be called upon to decide in such a case. Prohibition of marriage may be a very cruel measure under certain conditions. In some cases the dangers can be considerably lessened by an artificial interruption of pregnancy. The physician who permits marriage under such circumstances takes an immense responsibility upon his shoulders.

Palm tried to influence the intensity and the intervals of labor pains by the administration of an extract made from secale cornutum, which he calls spasmotine. The results of his experiments are very encouraging and open a wide field for interesting experimentation, because he has apparently succeeded in starting labor pains with this preparation.

A topic receiving much discussion was Bossi's method of rapid dilatation of the cervix. Duehrssen attacked Bossi's method in an article entitled "Shall Bossi's Method of Dilating the Cervix be Considered an Advancement in Obstetrical Therapeusis?" He answered the question with an emphatic *no*. In the well-known German fashion Bossi replied, and was met by Duehrssen's rejoinder, the controversy gradually becoming rich in personal invective. It would seem to the unbiased reader that Bossi has been unable to hold his ground. Bumm and Schauta express their opinion as against Bossi's method. Zangenmeister's warning against Bossi's dilator is quite emphatic. Bardeleben demonstrated two specimens before the Obstetrical and Gynecological Society of Berlin which proved that even the most careful handling of Bossi's instrument does not exclude the possibility of very serious injuries. In a discussion before the

New York Obstetrical Society we find Jewett, Clifton Edgar, Murray, Coe, Grandin and others among the adversaries of Bossi's method. However, there may be found in the literature of the past year several reports on the successful use of this instrument; for instance, by Ostreil, Meyer, Beck, Calmann, Keller, Hammerschlag and others. It may be stated here, however, that even many of the advocates of the instrument warn against its use in cases of placenta previa.

The question of the treatment of rupture of the uterus during labor is discussed by Kolomenkin in a very exact and interesting paper. He offers very good arguments against the tendency of the last few years to rely entirely upon expectant treatment in cases of rupture of the uterus. His conclusion is that the operative treatment guarantees better results than conservative treatment, and that among all the operative procedures the total extirpation of the uterus with a free drainage through the vagina is the most successful.

In order to avoid serious and permanent palsies in the newborn, Bochroch, in a paper read before the Philadelphia Obstetrical Society, recommends the more frequent and earlier use of the forceps in labor. The prolonged pressure of the head as it so often occurs in the primipara is, in his opinion, responsible for all kinds of brain lesions and palsies. He says: "It would seem that in every child in whom at birth there are present symptoms of suffocation following dystocia, in whom there has been prolonged pressure and constriction of the head, it would be a justifiable procedure to rapidly make an opening of moderate size on either side of the parietal region. By such a procedure the effused blood escapes or could be washed out with a normal salt solution."

Such a polypragmasia well-nigh suggests the question whether there is such a thing as a normal physiological delivery. But this question seems to have already been answered with an "no." F. Leavitt, clinical instructor of obstetrics in the University of Minnesota, in a paper, announces with pride that for the last five years he has delivered almost every case with instruments, and expects his confreres and most probably his pupils to follow his example. Kamann reports a number of cases in which serious injuries to the skull, due to the use of forceps, have caused the death of the newborn.

Briens expresses very conservative views as regards contraindications against nursing. He finds such only in acute diseases of long duration, in tuberculosis and malignant tumors of the mother. Schlossmann even refuses to accept tuberculosis of the mother as an absolute contraindication against breast feeding. Nursing under such conditions does not mean a greater danger of infection for the child, but certainly makes it more resistant against infection, and guarantees its better development. As a rule, nursing does not seem hurtful to tuberculous mothers. It is an every-day experience that nursing mothers grow stout, and that is exactly the effect we try to obtain in tuberculous patients by means of overfeeding. Budin describes nineteen cases of la grippe, of uterine, puerperal and other infections, occurring in nursing mothers. The only precaution used was that the babies were kept away from the mothers, except during nursing time. No unfavorable results were noted in any instance as far as the nutrition of the babies was concerned.

Stroganoff subjects to a critical consideration the theories advanced by the many authors who have contributed during the past three years to the question of the pathogenesis of eclampsia. He repudiates the toxemic and uremic theories and offers new proofs for his own hypothesis that eclampsia is an acute in-

fection. His method of treatment—the administration of morphine and chloral hydrate, rectal injection of normal salt solution, administration of oxygen but no chloroform, and immediate delivery—still proves very successful in his hands. Hofmeier acknowledges the value of narcotics and other drugs in the treatment of eclampsia, but in his opinion the one measure which promises the best results and fails only in rare instances, is immediate forced delivery. In cases of advanced pregnancy the delivery can be obtained with but small danger to the mother by means of the vaginal Cesarian section after Duehrssen, which in his opinion is decidedly preferable to Bossi's method. Another strong advocate of immediate forced delivery is Maury.

There must be recorded in this connection a novel operative treatment for eclampsia. Edebohls reports a case of successful bilateral decapsulation of the kidneys for puerperal eclampsia. This trial was the logical outcome of the successful results the author had obtained by performing the same operation in chronic Bright's disease. It hardly can be expected that this new method will be adopted by the profession at large.

Schroeder criticises the usual form of eclampsia statistics, which simply record figures. He thinks that they would prove more useful if an attempt were made to divide eclampsia into different types, based upon the degree in which the kidneys are affected or upon the various forms in which the cerebral symptoms present themselves, etc.

Edsall pronounces the examination of the urine for urea as an indication of the possible onset of eclampsia as unscientific. The amount of excreted urea is, of course, dependent upon the amount of nitrogenous food taken. In later pregnancy the elimination of nitrogenous substances must be relatively smaller, because they are necessary to the formation of fetal tissues.

Marchand, in 1895, and Fraenkel, in 1898, had called attention to the strikingly frequent combination of cystic degeneration of the chorionic villi (hydatidiform mole) with cystic degeneration of the ovaries. In 1901, Stoeckel, in a very interesting paper, for the first time exposed the true nature of these cystic formations in the ovary—they were true corpus luteum cysts. Very recent investigations made by Pick, Jaffe and others have shown that in these cystic degenerated ovaries lutein cells are distributed all over the interstitial ovarian tissue. In the light of the classical work of Fraenkel on the physiological function of the corpus luteum (which has been mentioned in detail above), this increase of lutein substance suggests a close etiological relation between the degeneration of the corpus luteum and the degeneration of the young ovum into a hydatidiform mole. In Pick's opinion, in these cases a primary overproduction of lutein cells brings about an abnormal productivity of the chorionic epithelia. Pick goes one step further and assumes that the cystic formations found in the ovaries in cases of chorio-epithelioma malignum may be corpus luteum cysts. Runge's latest publication proves that Pick's assumption is well founded. He describes multiple corpus luteum cysts with dissemination of lutein cells all over the ovarian tissue in a case of chorio-epithelioma, and Krebs puts another case of this kind on record.

Diepgen refers to the difficulties of determining the true nature of such corpus luteum cysts even by means of microscopical examination. We refer the reader who desires to familiarize himself with the present status of the question

of chorio-epithelioma to an article of Teacher in the *Journal of Obstetrics of the British Empire*, which gives a most satisfactory resume of the subject.

Little that is certain is known of the causes that lead to the settling down of the impregnated ovum in the fallopian tube. In the hope of throwing further light upon this subject, Opitz has examined the portion of the tube which lies between uterus and ovum, in twenty-three cases of early tubal pregnancy. Of far-reaching importance in the etiology of tubal fetation are the changes which he found in the mucous membrane lining the tubes. He observed in a strikingly high percentage of cases a firm union betwen neighboring folds or between branches of the same fold. The number and extent of these adhesions varied very much, but in the majority of cases the adhesions were so numerous that on transverse sections the fold seemed to form a kind of sieve. By means of this agglutination branches of the tubal lumen are formed which end blindly, and it is very suggestive that an impregnated ovum may wander into such a cul-de-sac and there become arrested. Micholitsch arrives at a similar conclusion. He finds the ovum in tubal pregnancy, as a rule, developed in a saculation or blind-ending side branch. In his opinion these diverticula are either congenital or caused by inflammatory processes taking place in the mucosa. Those of the readers not familiar with German are referred to an article by Andrew in the *Journal of Obstetrics of the British Empire*, which gives a very good and clear review of the literature bearing on the anatomy of the pregnant tube; but the most complete expose of this question may be found in Hofmeier's report prepared as a basis for general discussion before the congress of German Gynecologists in Wuerzburg, 1903. It seems that it is now generally accepted that the impregnated ovum penetrates into the mucosa exactly as it does in the uterus. In the tube, however, the ovum develops outside of the tubal lumen, entirely within the muscular layers.

From observations of Opitz and Micholitsch, it seems obvious that the tube which has once harbored an impregnated ovum is very liable to become again pregnant and that there must be a considerable danger of the development of an ectopic pregnancy in the other tube, since inflammatory processes of the tubes are, as a rule, bilateral. The justification of such a contention is established by the frequency with which, of late, cases of repeated ectopic pregnancy in the same patient are recorded in literature. Vassmer collected one hundred and thirty-two unimpeachable cases of this kind.

Schambacher claims that in a considerable number of instances of peritubal and retro-uterine hematoceles ectopic pregnancy can be excluded. Kober denies the correctness of this conclusion in a paper in which he shows that the expulsion of the ovum from the tube may occur in such a complete way that chorionic tissue may be found in only very limited areas of the tube. The diagnosis of tubal pregnancy, therefore, can be excluded with absolute certainty only if both tubes have been divided into complete series of sections and all the sections have been examined microscopically.

Schenk formulates an answer to a question which is always of considerable importance and interest to the general practitioner: In which cases of ectopic pregnancy is operation indicated, and in which cases is conservative treatment permissible? He answers: If the fetus is alive, operation is to be performed at once. If the fetus is dead, operation is necessary under the following conditions: If there is an internal hemorrhage, if there is a severe external hemor-

rhage or if symptoms of infection make their appearance. In cases of uncomplicated hematoceles conservative treatment is permissible, but the patient must be observed closely. Schenk acknowledges, however, the argument made by Prochownik, that even in this last group of cases early operation under certain conditions will be a more conservative procedure than an operation performed when the onset of complications makes it unavoidable.

At a time when the Trendelenburg position stands in high favor with all surgeons, it is interesting to note an opposition to this posture. Kraske emphasizes the disadvantages of the elevated pelvic position, referring to paresis of the nervus tibialis anterior, emphysema of the abdominal walls, serious disturbances in the circulation, aspiration of stomach contents into the air passages, hemorrhages of the brain, etc. Franz proves by means of exact experimentation that the abdominal respiration in the Trendelenburg posture is lessened to a considerable degree in every instance, while the thoracal respiration in compensation is but slightly or not at all increased. This interference with the proper ventilation of the lungs during anesthesia may prove harmful.

Drainage after laparotomy is discussed freely by a number of German gynecologists. Olshausen asserts most emphatically that drainage is a superfluous, if not dangerous, procedure in almost all gynecological operations. In a total number of 1,555 laparotomies, he resorted to drainage or a tamponade in but nine cases. Hofmeier accepts, in a general way, Olshausen's views, but finds, however, ample justification for the use of drainage in all cases in which there remain large cavities lined by ragged and infiltrated walls that do not fall together and cannot be brought together by sutures. Sippel attacks Olshausen's extreme views, arguing that a number of Olshausen's patients had died, and that he had some doubt whether some of these might not have been saved by a proper use of drainage. Fehling, too, refuses to accept Olshausen's views concerning drainage.

Macnaughton-Jones considers the importance of proper attention to the mouth and teeth before and after operation upon the pelvic viscera. Parotitis as a complication after laparotomy, especially after operation upon the ovaries, has been so often observed and reported that a number of writers have tried to explain this occurrence on the ground of a sympathetic relation between the parotis and certain abdominal organs. Macnaughton-Jones thinks that the parotitis is simply due to an infection from the mouth, if the latter and the teeth are not properly attended to after a long anesthesia, especially if the patient vomits freely.

The writer of these lines would suggest that the infection of the parotis may, to a considerable degree, be propagated by the traumatism to which the parotis is exposed, if the anesthetist presses against the gland in his endeavor to push the jaw forward.

One of the most important features of the meeting of the American Gynecological Society (Washington, May, 1903) was a symposium on the question: "Should the uterus be removed when the ovaries and tubes are removed in cases of double pyosalpinx when operating either through the abdomen or vagina?" There can be no doubt but that the majority of the speakers leaned towards conservatism. There were, however, quite strong arguments advanced in favor of radical operation, for instance, by Mann. Most of the speakers considered that the uterus should be removed if found extensively diseased, and Bovee's

point seemed to have been well taken when he said that in most cases the removal of the uterus will be found necessary.

In marked contrast to the year 1902, in 1903 very little was written on tuberculosis of the genital organs. There is one publication of interest by Gottschalk, in which he endeavors to prove that there is a possibility of congenital primary infection of the female genital organs with tuberculosis.

Atmokausis (application of steam to the uterine cavity) has found its legitimate place in gynecological therapeusis, especially in the hands of German and Russian gynecologists. Pincus, the most ardent advocate of this procedure, published quite a voluminous book (Pub., J. F. Bergman, Wiesbaden), which embodies the indications and the technique of the method. Fuchs reports very satisfactory results obtained in cases of serious hemorrhage during the climacterium by the use of atmokausis, especially in combination with curettement.

Sarazzin reports a case of peritonitis and death following the application of steam to the uterus, but in this case, just as in other similar cases reported previously, no positive proof can be offered that the unfavorable outcome was due to this method.

The literature of 1903 contains the usual number of new devices for the rectification of retrodisplacement of the uterus. Several new modes of forming loops of the round ligaments have been invented.

Simpson's method consists in an intra-abdominal but retroperitoneal shortening and anterior fixation of the round ligaments. G. H. Noble's operation, the intramural and extraperitoneal implantation of the round ligaments, seems identical with an operation described by Bardescu as a slight modification of an operation devised by Doyen in Paris. Byford also loops the round ligaments intraperitoneally, as so many have done before. The modification consists in stitching the loops to the abdominal wall near the internal inguinal ring. Foschini draws the round ligaments through a button-hole on each side, about 3 cm. outside the inner edge of the rectus muscle. Alexandroff forms folds in the lower portions of the broad ligaments by means of a vaginal operation, these folds meeting each other in the median line in front of the cervix, pressing the latter backwards and upwards. Bovee emphasizes in a few articles the advantages of the shortening of the sacro-uterine ligaments in operation for retroflected uterus. Goelet advises a rather simple operation for certain cases; the denuded posterior lip of the cervix is stitched to a corresponding denuded surface of the posterior fornix.

The reports of Kuestner and Martin to the Society of German Gynecologists (Wuerzburg, 1903), contained a very complete review of the technique of all of the modern operations for prolapsed uterus.

Rosenfeld and Menge devised new pessaries for very severe cases of prolapsus uteri.

Contributions on the subject of myoma of the uterus still show the tendency to regard myoma as by no means the harmless disease it was claimed to be by older writers. Bland-Sutton considers the "Perils and Complications of Fibroids After the Menopause." His views are briefly expressed in the following quotation from his paper:

"Some writers believe that they (fibroids after the menopause) occasionally disappear, but this is very hard to prove and harder still to believe; therefore, as a concession to tradition it may be described as a phenomenon about as rare as

the advent of a comet." "Surely there is nothing in the whole range of surgery more ironical than a woman spending twenty or even thirty years of her life as a chronic invalid on account of a uterine fibroid, in the expectation that at the menopause she will be restored to health and begin a new life, and then to realize that, far from this dream being fulfilled, the fibroid becomes necrotic, extruded or septic, places her life in the gravest peril, and that she may die in spite of surgical intervention."

Ch. P. Noble draws interesting conclusions from a careful consideration of two hundred and fifty-eight cases of uterine myo-fibroma of his own observation. In his belief death will result in about one-third of all cases if not submitted to operation, and in more than one-fourth the result will be chronic invalidism. The attitude of the text-books should be reversed and the rule of the practitioner should be to remove all fibroids that come under observation unless there seems to be in the particular case a good reason for temporizing. Hunner also pleads for a more active treatment of uterine myoma.

A very elaborate study of the so-called malignant myoma (leiomyoma malignum uteri) has been made by Ulesko-Stroganova. This myoma is of a very malignant type, metastases are formed at an early stage, always resulting in a fatal issue. This type of myoma is due to a metaplasia of muscle cells into cells which hardly can be differentiated from the sarcoma cell.

This writer and Cullen confirm in their papers the symptoms described previously by other authors as characteristic of sarcomatous degeneration of myomas—*i. e.*, rapid increase in size of the tumor, pain, hemorrhage and cachexia.

Noble, in a paper which contains a number of very good illustrations, gives a clear description of the removal of the myomatous uterus by hemi-bisection, a point which is also very clearly illustrated in a noteworthy paper by Howard A. Kelly, read before the Glasgow Obstetrical and Gynecological Society.

To Ries undoubtedly the credit is due of having been the first to advocate the removal of the pelvic lymphatics together with carcinoma of the cervix. It was a rule with him to examine all the removed lymph glands and he was the first to describe a very peculiar condition which has since been observed by Kroemer, Wertheim and others; namely, the presence of epithelial ducts in lymph glands which vary in size but never show any of the changes typical of malignancy. The only explanation that Ries finds for the presence of these epithelial ducts in the lymph glands is that they might be remnants of the Wolffian body.

In several instances Ries found a peculiar kind of lymph glands known as hemo-lymph glands. The characteristic of these glands is that their sinuses, instead of containing lymph and leukocytes, contain red-blood corpuscles mixed with the leukocytes. These glands stand in direct communication with the blood current, and offer an entirely new explanation of the different ways in which carcinoma of the uterus may form metastases. In a recent paper Wertheim confirms the observation of Ries that these epithelial ducts do not show any symptoms of malignancy. He does not, however, accept Ries' theory that they are remnants of the Wolffian body. Wertheim found these ducts in a certain percentage of all his cancer cases. For the sake of comparison the pelvic lymph glands of eighty cadavers, which did not show any signs of carcinoma, were subjected to a careful microscopic examination which proved entirely negative in every case. From this observation Wertheim is forced to conclude that notwithstanding the

fact that these epithelial ducts in the lymph glands do not show any signs of malignancy, they must be of a carcinomatous nature.

Kundrat studied the mode of dissemination of carcinoma of the cervix into the parametric tissue. He found a direct propagation *in continuo*, or the formation of isolated nodules within either the lymph glands or lymph vessels, lying completely separate from the cervix within the parametric tissue. Metastases were, as a rule, found in the lymph glands and only very rarely in lymph vessels. The writer uses this fact as an argument in defense of the efficacy of Wertheim's operation against the claims of certain writers that this operation does not permit of a thorough eradication of the lymph vessels. A very exhaustive paper by Kroemer gives a good survey of the present status of the lymph gland question in cancer of the uterus.

A paper which will considerably enhance our knowledge of the carcinoma problem is one by Hitschmann. The possibility of metaplastic changes in carcinoma tissue is almost generally acknowledged. Hitschmann brings the convincing proof that in glandular carcinoma of the uterine body this change of cylindrical into squamous cells is a rather common occurrence. The few cases recorded in literature where in the same uterus both adeno-carcinoma and squamous cell cancer were found, require, in the light thrown on the subject by this author, a new explanation. The squamous cell carcinoma in these cases simply represents a metaplasia of the adeno-carcinoma.

There are but a few contributions dealing with the operative treatment of cancer. It would seem that the radical abdominal operations with extirpation of the pelvic lymph glands (after Wertheim, Mackenrodt, and others) are gaining in favor. Kroemer, and especially Olshausen, emphasize, however, the fact that there is still a place for vaginal panhysterectomy in the treatment of uterine cancer as long as positive proof is wanting that the more dangerous radical abdominal operation guarantees better lasting results. Very interesting is an elaborate paper by Lomer in which he shows that even an operation which did not remove all carcinomatous tissue may result in a complete cure.

Very exact observations have shown beyond doubt that under certain conditions particles of carcinomatous tissue which could not be removed at the time of the operation will not only fail to grow but gradually disappear. An article by Klein in the *Muenchn. Mediz. Wochenschrift* gives a short and lucid expose of the present views concerning operative treatment of uterine cancer.

There is to be found in the literature of the last year the usual amount of discussion on the vexed question of the relation of diseases of the sexual apparatus and the nervous system. The problem remains unsolved. Freund published an interesting paper in which, based upon certain anatomical and histological investigations, he intimates a certain specific influence of parametritis posterior upon the development of hysteria. His paper was freely discussed by a number of German gynecologists, and it would seem that this new theory of the etiology of hysteria in the female did not meet with a very enthusiastic reception.

Theilhaber considers the influence of the nervous system upon uterine hemorrhages. The influence of the nervous system upon the function of all the organs of the human body, whether in condition of health or disease, is a most powerful one. The width of the lumen of every blood vessel is under the direct control of the nervous apparatus, which in this way regulates the function of all

excretory organs and of all mucous membranes, including those of the genital apparatus. The influence of emotion upon menstruation is well known, and the idea suggests itself that certain abnormal conditions of the nervous system may be responsible for irregularities in the function of the sexual organs, as amenorrhea, menorrhagia and metrorrhagia.

Theilhaber cites in support of his theoretical conjectures a number of exact clinical observations. It is evident that in such cases local measures, especially curettement, will prove absolutely ineffective, and only careful attention to the general condition will yield satisfactory results.

The same preponderance of obstetrical over gynecological publications which has been shown in the foregoing, as far as current literature is concerned, may be seen in the new text-books published in the past year. We find as new authors of notable text-books on obstetrics: E. Bumm, of the University of Halle, J. Clarence Webster, J. Whitridge Williams, and J. Clifton Edgar. Under the supervision of F. von Winckel, of Munich, a new encyclopedia of obstetrics will be edited by a number of the best known German obstetricians. The first half of the first volume (a book of more than 650 pages) has just appeared. Two more volumes will complete this most elaborate work.

Barton Cooke Hirst, the author of one of the most popular text-books on obstetrics, has published an excellent text-book on gynecology, and Palmer Findley devotes a volume of about 500 pages to the "Diagnosis of Diseases of Women."

PEDIATRICS.

IN CHARGE OF

ALFRED FRIEDLANDER, M. D.

The year has been marked, as usual of late, by very decided activity in the field of pediatrics. Much work of lasting value has been done, which can hardly be chronicled in so condensed a summary as this, and no attempt at completeness of review can be made here. A brief discussion of some of the unsettled questions in pediatrics follows:

Feeding of Infants.—In America, studies on the question of substitute feeding have continued to take the line of more or less accurate percentage modifications of cow's milk. It is being recognized, perhaps more clearly, that complicated mathematical formulæ are, on the one hand, not feasible as working bases in actual practice, and on the other, as not necessary for the attainment of good results. Yet it is nevertheless true that the American school holds fast to the general percentage principle as the best means of modification of cow's milk to fit it for human infantile digestion.

At the same time it is becoming more and more evident that no kind or amount of modification can make a poor milk a suitable infant food. There can be no question that pure, clean, *raw* cow's milk is better than the sterilized or pasteurized product. And in the larger cities the effort to obtain such milk is meeting with more and more success. It has been shown, largely through the work of the so-called Milk Commissions, that clean milk can be produced on a commercially profitable basis, and the number of dairies producing "certified

milk'' has grown very decidedly of late. A recent monograph issued by the U. S. Department of Agriculture on the ''Milk Supply of Two Hundred Cities and Towns'' (Alvord and Pearson) shows, however, how deplorable the situation still is. It rests with the profession—which has taken the initiative in the important work of improving the milk supply—to carry the good work on. For, whatever system of substitute milk feeding be used, there can be no question that the use of a good, clean milk is a prerequisite of success.

With reference to the proper diluents to be used, it appears to be the consensus of opinion that cereals are of decided value—distinctly better than plain water. Of late it has been shown that in many cases the use of whey as a diluent is useful in those cases in which only a very low percentage of caseinogen is tolerated. In this way a high proteid can be given—often a point of value.

When one considers the study and the care given to the subject of infant feeding in America, it strikes one as strange to note the ease with which the French school disposes of the question. In France, as is well known, the use of whole milk, sterilized (commercially obtainable at the so-called ''Gouttes de Lait'' all over the country) is almost universal. If any modification at all is used, it consists simply in the direct dilution of cow's milk with water. Thus in the new French Cyclopedia of Diseases of Children (Comby and Grancher), the first volume of which has just appeared, the subject of infant feeding is settled in a way surprisingly simple. For the first month a dilution of equal parts milk and 5 per cent. sugar solution. For the second month two-thirds milk and one-third sugar solution. For the third month three-fourths milk and one-fourth sugar solution, and for the fourth month pure milk. Jacobi's use of cereal decoctions is mentioned, but otherwise the work of American authors on the subject receives no notice.

In Germany the system of determining the food value by the estimation of calorimetric equivalents is still in vogue. During the past year, however, there have appeared several articles embodying the results of feeding whole milk. Fitschen, for instance, has reported 131 cases where feeding was begun with diluted milk, the strength of the mixture being rapidly increased to the point of using whole milk. Care is taken not to overfeed the infants, and the milk is, of course, withdrawn immediately if gastro-enteritis supervenes. It was found that not only normal children, but even atrophic cases did remarkably well. Cohnheim and Mueller report the results of their studies in the use of sterilized milk. It was shown that while the fats and proteids were assimilated very easily when sterilized milk was given, the lime salts were not, and the milk ferments were destroyed. They argue, therefore, that the prolonged use of sterilized milk may lead to disturbances of true growth. (An American writer (Sill) also concludes that the prolonged use of either sterilized or pasteurized milk may, and does, cause rickets and scurvy). In Germany, however, the trend of opinion inclines more and more to the belief that every effort should be made to induce mothers to nurse their children, and failing this, that wet nurses should be employed. At the last International Congress in Madrid, Monti, of Vienna, declared emphatically that human milk is the only proper food for infants, either that of the mother or of the wet-nurse, and he went so far as to maintain that the institution of wet-nursing should be under direct legal control.

The English school adheres to the direct simple solution of cow's milk. According to Hutchinson, dilute cow's milk, condensed milk and peptonized milk

represent the positive, comparative and superlative of digestibility. He finds that mercury, in the form of gray powder, is often of very great value in indigestion, even where there is no reason to suspect a luetic taint. He notes furthermore that the inability to digest milk is often accompanied by an increased capacity for the conversion of starch, a point that has been elsewhere insisted upon.

As one of the curiosities of the subject, there may be mentioned the work of Lissauer, who determines the quantity of food to be given by a series of exceedingly complicated formulæ derived from careful measurements of the total body surface!

Of the various surrogates for cow's milk in artificial feeding, mention need be made only of buttermilk the use of which was alluded to in last year's review, has been steadily increasing. Reports indicate that it is of great value for premature and weakly infants, for infants with chronic gastro-intestinal catarrh and in cases of infantile atrophy. Normal infants also thrive excellently upon it.

General Hygiene.—There has been much discussion recently concerning the question of "hardening children." The advocates of the system claim that systematic roborant treatment—including as one of its essentials the use of the daily cold bath with friction—is of very decided value in a great many cases. While it is not claimed that the treatment is applicable to all children, it is maintained that those children who can stand the treatment are very greatly benefited by it. Hecker sums up the views of those who do not believe in the system. According to him, the treatment not only offers no protection against taking cold, but it actually increases the predisposition thereto. In addition it adds to the nervousness of many children, is often the direct etiological factor in the production of neurasthenia or severe anemia. The treatment should never be begun too early—never in infancy. Anemic and nervous children are not fit subjects for the treatment.

School Hygiene.—In many American and continental cities, regular school inspection is now the rule. The good results that have followed the introduction of this system are everywhere apparent. The spread of the acute infections, of skin and eye troubles has been decidedly diminished. Herrman reports the excellent results achieved in New York, where in addition to the regular medical inspection a corps of trained nurses is employed to treat (daily), under medical direction, cases of conjunctivitis, ringworm, impetigo, etc.

Diseases of the Newly Born—Infections.—Hamill and Nicholson present a series of carefully studied cases. They conclude that any classification today must be a purely bacteriological one, that the clinical manifestations hitherto described under the various headings of melena, hemorrhagic disease, hemophilia, Buhl's disease and Winkel's disease may exist as evidence of any one of a number of infections. Regarding ports of entry, the authors believe that the buccal cavity, tonsils, pharynx and gastro-intestinal tract are the most common, and that too much attention has been given the cord in this connection.

Specific Infectious Diseases—Scarlet Fever.—The question of the specific etiological factor of scarlet continues to arouse the greatest interest and the most widespread discussion. Class, of Chicago, reiterates his contention that the diplococcus described by him some time since is undoubtedly *the* specific excitant of this disease. This is a large diplococcus—four times as large as an

ordinarily staphylococcus—found in 90 per cent. of all throat cultures, if made early. Special earth agar is the medium of choice. Weaver, after a careful study of the subject, believes that scarlet is a streptococcic infection, and finds the streptococcus present on the tonsil in enormous numbers in nearly all cases. On the other hand, Hektoen, as the result of his researches on the blood of scarlet fever patients intra vitam, contends that no direct support is given to the theory that scarlet is a streptococcic infection. Baginsky believes that scarlet is certainly a streptococcic infection—though the actual species has not as yet been discovered. And while this is being written there comes the announcement that Mallory, of Harvard, has discovered the causa causans of scarlet—not in a bacterium, but in a protozoon, as in the case of malaria. This protozoon has been found in the epithelial cells of the skin and tongue, and in the superficial lymph vessels and spaces of the corium. Evidently the question of the specific excitant of scarlet cannot be said to belong to the res judicata of medicine

Of special symptoms, Aubertin calls attention to an early symptom first described by Mayer. This consists of a peculiar tingling and pricking of the hands, most distinctly felt in the palmar aspect, without redness or swelling. There is no pain. Inasmuch as the symptom comes on early—and does not occur in the other exanthemata or in the various scarlatinoid eruptions, it is believed that it might have diagnostic value in doubtful cases.

Baum has published an interesting resume of all cases of scarlet (628) seen by him in hospital during seven years. An abstract of this article appeared in this journal in November. Attention has been called again to the fact that there are undoubted cases of scarlet with relapse. Shaw has published such cases recently.

Sutherland, while insisting upon the intensely contagious nature of the disease, doubts that it can be transmitted by a third person. He does not even believe that a nurse or attendant can convey the disease, and quotes statistics in favor of his contention.

With reference to treatment, Saunders lauds pilocarpine as being of great value. It has a direct effect upon the salivary and muciparous glands, and also possesses marked toxilytic properties. Its administration should be carefully watched, especially at first—atropine is the direct physiological antidote to be used if necessary. The good effects of the treatment—which need not cause the exclusion of other therapeutic measures—are seen in the reduction of temperature, the relief of the dryness of the mouth and tongue and the prevention of glandular infection.

Of great interest is the subject of the treatment of scarlet with scarlet-streptococcus serum. Moser, of Vienna, has reported the results with his serum. This was prepared by injecting pure cultures of various varieties of streptococcus into horses—and after months of immunization—bleeding the animals. The serum thus obtained was polyvalent, but very large quantities (180–200 cc.) were required. Of eighty-four cases injected (only severest cases being taken) sixteen died (19 per cent.). The results while encouraging are not as yet satisfactory; but it is believed that better results can be obtained with a better serum, especially if the injection be done early. Leyden has treated a number of cases with human serum obtained from convalescent scarlet fever cases. Of sixteen

cases, twelve were distinctly improved. No bad effects followed the injections (at first a small amount, subsequently 20 cc.).

Fischer has treated two cases with antistreptococcic serum, with good results in both cases, disappearance of the necrotic membrane after fourth day, and decline of temperature (by lysis).

Diphtheria.—Dourcart has published some interesting statistics as to the persistence of Klebs-Loeffler bacilli in convalescents. In 65 per cent. of cases treated by antitoxin, the bacilli disappear with the membrane; in 20 per cent. they persist for several days after; in 15 per cent. they persist considerably longer. There is no doubt that in exceptional cases they may persist for several months, though in these cases it has been shown that the virulence is much diminished.

In a discussion of the causes of death in diphtheria, Kohn says that they may be divided into three groups: (*a*) mechanical, (*b*) toxic, (*c*) as a result of complication. In the first class, asphyxia, due to closure of the glottis, plays the most important role. When it occurs early, spasm of the hypersensitive glottis may be the cause of the stenosis; while later on the effects of swelling and exudate become more marked, spasm now playing no part.

The toxemic form of death is due to direct intoxication of the system and consequent depression of all the body tissues, by the toxalbumines elaborated by the bacilli. It is to be remembered that very frequently there is a mixed infection, and death in these cases may be due to streptococcic septicemia.

Of the complications broncho-pneumonia is most to be dreaded. It occurs most often in the laryngeal cases. In septic diphtheria, nephritis may be the cause of death. Heart failure is a common cause of death, and may come on at any stage of the disease. Cardiac thrombi may form—or there may be a complete myocardial degeneration. In some cases the combination of diphtheria with other infectious processes—*e. g.*, scarlet, measles—may be the cause of death.

Comby presents an exhaustive review of serum therapy. The dose of antitoxin should be proportionate to the age, 2000 units under two years, 4000 for older children. In cases of grave diphtheria, in cases coming under observation late, and in laryngeal diphtheria, these doses should be doubled and repeated in twenty-four hours if necessary. Large doses up to 20,000 units may be necessary. Serum should be injected in suspicious cases without waiting for the bacteriological test. In severe cases there are no contra-indications to the use of the serum, but in mild cases the author believes that the presence of tuberculosis and of chronic Bright's render great caution necessary. This observation has not been confirmed by other clinicians. Comby is a firm adherent of the prophylactic injection in exposed children, and in this connection it may be observed that Caille goes so far as to recommend a prophylactic injection for *all* school children once or twice during the school year. Inasmuch as the immunity conferred by such injection is not supposed to last more than three or four weeks, it is difficult to see how a single injection of this sort can be of great benefit.

Comby (and Monti) also discuss the question of serum exanthems. These eruptions are due to an intoxication from the injection of a proteid containing fluid of an animal of different species. They take various forms, and may appear early or very late, but they should never be considered a contra-indication

to the use of the serum. Monti believes that a direct relation exists between the *amount* of fluid injected and the production of the eruption. For this reason the use of concentrated sera (small quantity of fluid) is to be preferred.

Cairns recommends the intravenous injection of the serum, especially in malignant and toxemic cases, in cases with marked pulmonary involvement—or as a last resort in moribund cases. The initial dose should be 20,000–25,000 units—but the author has used as much as 82,000 units in a single case.

Measles.—Linsbauer has shown that the pseudomembranous laryngitis which sometimes complicates measles is very frequently due to the Klebs-Loeffler bacillus. In fifty cases of this sort this bacillus was found in twenty-nine (58 per cent.).

Platenga studied the blood in measles and found that while during the stage of incubation there is a distinct and constant leucocytosis running up to 20,000 whites or over, during the stage of eruption there is a distinct diminution in the number of whites (leucopenia), with relative increase of the mononuclears. This author also believes that measles and rotheln are identical, due to different degrees of virulence of the same germ, a view certainly not shared by the majority of clinicians today.

Whooping-Cough.—Reyher, as the result of a very carefully conducted research, says that he is able to confirm the claim of Czapleuski (made in 1897) that the specific germ is a small, non-motile, short rod, with egg-shaped rounded ends, which, morphologically as well as tinctorially, somewhat resembles the influenza bacillus. Jochmann, on the other hand, found another bacillus (which he regards as the specific etiological factor) in 20 cases of pneumonia complicating pertussis. This germ also resembles the influenza bacillus, and J. therefore feels that special care had best be shown to children with influenza in the environment of children with pertussis. The collective investigation report of the American Pediatric Association (recently collated by Morse) showed only 5 cases of transmission of pertussis by a third person. Such transmissions must, therefore, be very rare.

Jacobson calls attention to two atypical forms. A "forme fruste" without whoop (which could hardly be recognized except in the presence of an epidemic), and a dyspeptic form, with marked predominance of gastro-intestinal manifestations.

There have been various "specifics" for the treatment of pertussis discovered of late, as usual.

Typhoid Fever.—Nobecourt collected 1826 cases of typhoid occurring under the age of fifteen. Of these 33 (1.8 per cent.) were under the age of two. He considers the prognosis of typhoid in very early life as grave, because of the liability of complicating gastro-enteritis, inasmuch, as this renders the proper nourishing of the infant almost impossible. In an article on fetal, congenital and infantile typhoid, Morse confirms this view as to the grave prognosis of typhoid in very early life. Of 16 cases occurring under the age of two (Widal positive in all) the mortality was over 50 per cent. In a review of the subject of typhoid in childhood, Koplik points out that the varying severity of the epidemic must always be borne in mind, but taking all factors into consideration, he is inclined to believe that the mortality of typhoid in childhood is at least as high as in adult life. It is certainly true that the mildest cases may suddenly

show the severest complications, and the causes of death are almost the same as in later life.

Griffith, as the result of his studies of the literature and personal observation, concludes that typhoid is much more common in early life than had formerly been supposed. The Widal test has made the diagnosis more easy. Josias and Toslemer found the Widal positive in 49 of 50 cases in childhood. It is usually present before the tenth day, but is subject to the same variations as in the adult. Griffith notes the tendency of the nervous symptoms to overbalance the intestinal ones in childhood. He remarks, too, that children tolerate high temperature much better than adults, so that very vigorous antipyretic measures are not always necessary. Churchill has studied the blood of children in typhoid. He finds approximately the same conditions as obtain in adult life—reduction of reds and of hemoglobin, with leucopenia and a relative lymphocytosis.

Influenza.—Williams calls attention to the great morbidity and the frequently great mortality from this affection in childhood. The division of cases into various types is more or less arbitrary, as nearly all cases show the mixed variety. A form of the disease often overlooked is the chronic variety; chronic cough with glandular enlargement is often influenzal in character. Relapses and sequelæ are common even during convalescence, and may follow even very mild initial seizures.

Rheumatism.—The modern trend of opinion inclines more and more to the belief that acute articular rheumatism is an infectious process. The definite exciting germ has not as yet been absolutely fixed upon, although the discoveries of Apert and Triboulet, subsequently confirmed and extended by Poynton and Payne, have lately been confirmed again. But even though there be some question as to the direct relation of this diplococcus to rheumatism, it is generally held that rheumatism is, in fact, an attenuated septicemia. Avanzino has even gone so far, on this theory, as to treat sixteen cases with intravenous injections of bichloride of mercury. He claims to have noted marked and rapid improvement, without relapse.

The close relationship of chorea and rheumatism has been noted for a long time. At the last meeting of the British Medical Association, Lees insisted upon the connection of the two diseases, and stated that he gets excellent results in the treatment of chorea with the salicylates. Kobrak, who also believes in the association of the two affections, believes that, in addition to the rheumatic virus, a nervous element is at work in the production of chorea in rheumatically predisposed children. In this way he explains the preponderance of chorea in the female. He reports very good results from the treatment of chorea with aspirin. Probrazschewsky has even gone so far as to treat three cases of chorea with a polyvalent antistreptococcic serum (with excellent results), in the theory that many cases of chorea are undoubtedly infectious. It is noteworthy that neurologists absolutely deny the infectious nature of *all* cases of chorea, claiming that various varieties must be recognized.

Tuberculosis.—The discussion as to the transmissibility of bovine tuberculosis to the human being still goes on with unabated zeal. In the last number of the *Archiv fuer Kinderheilkunde*, Ganghofner, of Prag, insists that such transmission is so rare as to be practically a negligible quantity, and other German authorities have voiced like sentiments. American authorities take a precisely

opposite view, and succeed in adducing most convincing proof of the danger to the child from the ingestion of milk from tuberculous cattle. Price Jones urges that studies be made to isolate the bacilli causing alimentary tuberculosis as to whether they are always the same, what relation they bear to bacilli found in cow's milk from cows with tuberculous udders, and to other so-called varieties of the tubercle bacillus. Another Englishman, Raw, believes that primary intestinal tuberculosis is probably bovine in origin, but that it is a variety distinct from human pulmonary tuberculosis. He believes that bovine tuberculosis is more virulent for children than is the "human" form, and even goes so far as to suggest that the cervical tubercular adenitis of children is due to absorption of tubercle bacilli from the milk through the tonsils. Reid calls attention to the fact that in India the milk for human consumption is all boiled, and that children take little or no meat. Tabes mesenterica is almost unknown there, and tubercular hip trouble is very rare.

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Discussion as to the treatment of tubercular peritonitis is still rife. Of the three forms, ascitic, fibro-adhesive and ulcerative, suppurative, the best results have followed laparotomy in the ascitic form. But statistics show that this class of cases also does very well under medical treatment. Leroux has reported a severe case of the fibro-adhesive variety, without ascites, which recovered under simple open-air medical treatment.

Guthrie reports forty-one cases—fourteen with laparotomy—with seven deaths (50 per cent.), twenty-seven treated medically, with four deaths (16 per cent.). Other statistics, however, show better results with laparotomy. An absolute decision of the question of the value of laparotomy as routine treatment in this disease has not been had as yet, but it would appear that the operation does not do as much as was at one time claimed for it.

Diseases of the Digestive System. Recurrent Vomiting.—Edsall has reported six cases in which acid intoxication of the type seen in diabetes was present. Treatment directed to the correction of this error of metabolism (by use of large quantities of bicarbonate of soda) had strikingly good results. Pierson also reports four cases with diacetic acid and acetone in the urine, where the use of the alkali gave relief. Ely insists upon the importance of differentiating this condition from so-called bilious vomiting. According to Valagussa this condition is only one symptom of an acid intoxication of the organism induced by unknown poisons in uricemic subjects.

Summer Diarrhea.—The relation of the bacillus of Shiga to the summer diarrheas has been diligently studied of late. While the last word has certainly not been spoken on this subject, it would appear to be definitely established that the Shiga bacillus is the exciting cause of a certain group of these cases. As a clinical fact, it has been noted that the bacillus is most apt to occur in the cases in which both blood and mucus are found in the stools. It is found, moreover, that the cases with positive bacillary find present no characteristic autopsy lesions; indeed, Knox insists particularly that no one type of the disease is associated with B. Shiga. It is probable that B. Shiga is itself a group organism with at least two distinct types. Flexner believes that whatever the Shiga bacillus does it does early, later there is always a mixed infection. If the serum treatment is to be of avail (its use now is merely experimental) it must, therefore, be given early.

Parke has called attention to the fact that, in cases of intestinal disorder, children can safely be deprived of all food for much longer periods of time than has been advised in the text-books. He reports two cases of withdrawal of all food for five and eight days respectively, water being allowed. The intestinal symptoms cleared after these periods, and both children recovered promptly.

In the treatment of gastro-enteritis, Hutinel relies upon an initial purge with calomel or oil, withdrawal of all food, and the substitution of sterile water. He uses very few drugs, not even alcohol, and places no reliance whatever on the so-called intestinal antiseptics.

The use of sterilized gelatin in gram doses as a direct addition to milk, has been highly recommended by certain French authors of late, who find it a better astringent than the usual drugs employed.

Diseases of the Respiratory Tract—Croupous Pneumonia.—Jenning calls attention to a sudden drop in the temperature curve without corresponding drop in pulse or respiration, followed by a secondary rise. The temperature then continues the typical pneumonic course. No explanation is offered. Griffith reports several cases, and has collected several from literature, where all the early symptoms pointed to appendicitis, but where, after 36–96 hours, the typical signs of pneumonia showed themselves and the abdominal symptoms disappeared. The necessity for careful and repeated chest examinations in children showing these symptoms is thus apparent.

Broncho-Pneumonia.—In the treatment of this condition, Kerley thinks it important to make the child comfortable. Fresh air is necessary, and the room should not be too warm. The author has discarded the use of jacket poultice or cotton jacket, because of the tendency to make the child uncomfortable. Food should be easily assimilable; in infants the milk should be well diluted. Steam inhalations with creosote (ten drops to the quart) are of value; so, too, counter-irritation with mustard plaster. Internal drug treatment is largely symptomatic. As expectorants, Kerley prefers ipecac. and tartar emetic, with Dover powder, to the ammonia salts. For a heart stimulant, tincture of strophanthus is preferred, alcohol being used only late in the disease.

Jacobi contributes a very interesting paper on interstitial pneumonia, which often rests on a luetic basis.

Diseases of the Circulatory System—Chronic Myocarditis in Childhood.—Zuppinger has reported two cases of this rare condition; one after diphtheria, the other after pneumonia. The prognosis is naturally always unfavorable.

Adams has collected all the cases of septic endocarditis occurring under the age of fourteen. They number forty-seven, of which four terminated in recovery. It would thus appear that septic endocarditis is rare in childhood. The following forms are recognized: (1) Primary; *rare;* (2) complication of septic disease; (3) complication of pneumonia or meningitis; (4) mixed infection due to pyogenic bacteria secondary to eruptive fevers, or secondary to rheumatic endocarditis.

Splenic Anemia.—The use of this term is now being objected to by many writers. As Morse has shown when anemia, splenic tumor and enlarged liver or lymph nodes are found associated in infancy, they are usually not dependent upon each other, but all depend upon a common cause—disorder of nutrition. The blood changes are not characteristic, the anemia is really secondary and not primary. The separation of certain definite forms of infantile anemia is there-

fore being gradually abandoned, inasmuch as it is being shown that the anemias of infancy are not forms sui generis, but merely types modified by the peculiar conditions obtaining at that time of life.

Interesting articles on the blood of normal children (which do not lend themselves to abstract here) have appeared in the *Archiv und Jahrbuch fuer Kinderheilkunde.*

Splenomegaly.—Marfan believes that in early life syphilis is the most frequent cause of chronic splenic hypertrophy, and this may, therefore, be used as an aid in the diagnosis of obscure cases of lues hereditaria. It should be remembered that the co-existence of splenomegaly and rickets does not permit, *per se*, the exclusion of hereditary syphilis from the diagnosis.

Lymphatic System. Enlarged Lymph Nodes.—Baer examined 350 infants—all ambulatory cases, and found *some* lymph glands enlarged in every case without exception. He questions the propriety of speaking of enlarged glands whenever they are palpable. Baer has also examined twenty-five infants varying in age from ten hours to five days. In all of these infants the axillary glands were palpable, sometimes markedly enlarged, and in some cases both cervical and inguinal glands were palpable.

Uro-Genital System. Post Impetiginous Nephritis.—Five cases of nephritis after impetigo have been reported—staphylo- and streptococci having been found in the skin. Nephritis from this cause is certainly rare.

General Diseases. Marasmus.—It has been shown by Stokes and Ruhrah that the thymus is always markedly affected in this disease. In autopsies on eighteen cases of marasmus the other organs showed comparatively little change, but the thymus showed thickening of the capsule and fibrous tissue, and atrophy of the lobules with disappearance of the lymphoid structure. Four patients with marasmus were fed thymus. Three of them died, however, while the other showed marked improvement. The authors believe that atrophy of the thymus is always found in infantile atrophy.

Rickets.—Neurath calls attention to a sign of rickets not previously described. This is the spindle-shaped appearance of the phalanges between the joints. It is not found in non-rachitic children Roos describes cases of "rachitis tarda" diagnosticated by the x-ray in children of eleven to fifteen years of age. He suggests that many cases of scoliosis and genu valgum may in reality be cases of rachitis tarda.

ORTHOPEDICS.

IN CHARGE OF

MALVERN B. CLOPTON, M. D.

The visit of Lorenz to many American clinics revived an interest in a subject which is not so nearly settled as his enthusiastic followers would have us believe. The bloodless method is certainly in greatest favor, and all agree that it nearly always improves, though there is not a complete reduction; and Hoffa holds that even if there is a reduction, it is not likely to be permanent. Pederson concludes, after 161 cases were tried, that nothing is rarer than a complete reposition; as also Kummel, who reduced only 11 out of 66 cases. The proportion of reductions vary with the operators; 12 out of 32 cases for Ridard, 1 out of 20 for Burghard; Nove Josserand reports 25 reductions, 37 transpositions, 2 fractures, 3 relapses and 2 immovable heads. Lorenz, in 1899, reported that in 135 cases, only 79 were anatomically satisfactory, 56 being doubtful or incomplete results, and, besides, 22 cases which could not be reduced and 15 in which he knew dislocation had taken place backward. And the operation is not without danger, inasmuch as Lorenz reported some years ago ten fractures of the neck of the femur and one case of gangrene from obliteration of the femoral vessels; and there have been reported three deaths from chloroform in 360 cases, which is an exceptionally high rate. Lange has used the Lorenz method for reduction, but after operation uses the large plaster cast of Hoffa, which embraces the lower part of the thorax, and the femur is in full abduction for a year. There have been numerous contributions to the anatomy of the congenital hip deformities, most of which have been reviewed by Bradford. He endorses Schede's operation, in which an osteotomy is done below the neck of the trochanter in those cases where the anterior twist of the neck would favor a relapse. Whitman also advocates abduction and inward rotation of the thigh in most cases, carrying the plaster bandage below the flexed knee, and he does a subtrochanteric osteotomy in those cases where the neck is curved forward. Bradford later recommends that the osteotomy be done in the length of the shaft instead of immediately below the trochanter.

Both of these American authors also advocate the Hoffa open operation in cases that relapse, and in cases where there are indications that the bloodless method would not be a success. They both recommend that the leg be kept immovable for several months, which will lessen the chances of anchylosis, even when a new acetabulum be chiseled out.

Froelich has endorsed Keimisson's subtrochanteric osteotomies for double congenital hip dislocation in those cases which are too old to be reduced, and the danger of anchylosis, should the Hoffa operation be performed, prevents the open method.

The question of the etiology of true coxa vara is still variously discussed. Borchbard thinks it due to a series of small traumata, which produce minute fissures in the neck and allow it to flatten, while Yvemantt thinks it is a pure trophic disturbance, and Haedke concludes, from a careful macro- and microscopic examination of a bone from a seventeen-year-old child, that it was due to

late rickets, but that in the great majority of cases Kocher's "juvenile osteomalacia" is the best explanation.

In scoliosis much has been done to perfect apparatus for forcible correction of severe cases, which is the most satisfactory way; but, in the earlier forms, rest, massage and exercise are elected. The theories are still widely discordant, but some new observations are added without settling matters very much. Arnd succeeded experimentally in rabbits in producing a marked scoliosis by excising the erector spinal muscle on one side. Lovett has contributed again to our knowledge of torsion in lateral curvature. Schultheiss denies that the school is the only or even the principal cause of lateral curvature and round-shoulders, on the ground that a great many of them are well advanced before school age. Right-handedness and displacement of the pelvis toward the left, flattening of the bodies of the spines by the aorta, and the slight inclination of the spine toward the left, caused by this, all influence the form of the curvature. School investigations show an equal frequency in boys and girls; but, as age advances, the increase in girls is threefold and in boys only twofold. Sutter finds the same conditions, and adds that in boys the upper spine is more often deformed, while in girls the lower as often as the upper, and the deformity in boys is more marked than in girls.

Mouchel and Clement review the literature of congenital elevation of the scapula, and divide the 62 recorded cases into simple elevations, elevation with rotation, and elevation with bony changes and connecting links to the spine. Operative treatment (only recommended when there is a bony change) consists in dividing the trapezius and removal of the supero-internal angle, sliding the scapula down on the chest and retaining it there with plaster of Paris, the arm elevated to 180°. They believe in Guerin's theory of arrested development, as does also Lick, in whose two cases, beside bone deformities of the scapulæ, there were also incomplete closure of the vertebral column itself. Mohr, in considering double congenital elevation, of which eight cases are reported, thinks that Sprengel's theory of intrauterine pressure explains.

Tendon transplantation for paralytic deformities has been thoroughly tested, and has not been so superlatively successful as the early adherents would have made us believe, and the idea now is, as best put by Whitman: "The importance of reinforcing the comparatively ineffective operation of tendon transplantation by procedures to prevent deformity and lessen the strain on the weak muscles." The early successes described were undoubtedly due to the great apparent functional increase of the muscle after the improved attitude following correction of the deformity, but the positive functional gain due to transplantation itself is of small moment. Consequently, tendon transplantation is now regarded as merely one of a number of procedures used in correcting certain types of paralytic deformity. Arthrodesis is recommended as an adjunct, for instance, of the astragalo-navicular joint for valgus due to paralysis of tibialis anticus and the extensor hallucis tendon after division at the insertion is threaded into a hole drilled into the navicular, and is sutured to itself and the periosteum. It is pointed out, also, that the reason that some tendon cases do not do so well long after operation is because there is stretching at the point of splicing; so, direct insertion into a groove in the bone, or even a hole through the bone or directly beneath the periosteum, have been found the best methods, when possible. Lange recommends in case the tendon is too short for direct attachment to

bone, to lengthen the tendon with silk, which will last until tendon tissue is built up. He recommends a long fixation in plaster of three months or more, before the parts are used. Goldthwait considers tendon transplantation a recognized surgical procedure, which is no cure-all, but, in combination with other measures, nearly always improves the patient's gait and allows either a lighter brace or its complete discarding. The most successful cases were those where the sartorius or gracilis were made to do the work of the paralyzed quadriceps.

Tendon transplantation of the flexor tendons of the posterior part of the thigh into the quadriceps tendon for spastic paralysis has met with some success. Likewise, the transplantation of flexors of the forearm into the extensors in wrist-drop from cerebral palsy gives much improvement.

Springer advocates the lengthening of the tendon Achilles by the Z method of Beyer, in which the tendon is divided half through in front and a sufficient distance below on the back side, and then by a strong dorsal flexion a subcutaneous division takes place.

Seggel has studied exhaustively the repair of tendon wounds, and finds that after tenotomies, on the tenth day spindle cells appear in the blood clot that fills the sheath, on the thirtieth day tendon bundles are plentiful, and on the fiftieth day the climax of organization is reached.

Of the non-tubercular diseases of the joints, the chronic diseases, long loosely classed as arthritis deformans, rheumatoid arthritis or osteo-arthritis, have been better classified and more carefully studied by Goldthwait, and his views offer some escape from the hopeless confusion of former writers. Osteo-arthritis is defined as beginning in the cartilage, which is destroyed in the parts subjected to pressure while it is thickened and heaped up at the periphery. When the cartilage disappears from the bone, the underlying portion becomes worn away and eburnated, while the fringes at the margins of the joint are converted into bone, and the joint is an irregular solid enlargement, usually with distortion of the limb. Rheumatoid arthritis is, on the other hand, primarily of the soft parts of the joint, the bone is only secondarily and superficially involved, and the final result is limited motion or anchylosis without enlargement of the joint, and the process is spoken of as atrophic, to distinguish from the hypertrophic osteo-arthritis, and thus indicating that the two kinds of chronic joint disease are distinct. These changes are well shown in x-ray pictures. Goldthwait also classes Still's disease with rheumatoid arthritis and considers it not a distinct disease but of a variety due to various toxins. The great desideratum in treatment is a general building up of nutrition for both diseases, and in osteo-arthritis fixation in the active stage, particularly in spinal ostec-arthritis with the nerve pain down the sciatic and in back of leg. In rheumatoid arthritis the joint movement is encouraged as much as pain will allow and massage is used unless it increases the discomfort. In certain cases where osteophites lock the joint or interfere with motion, either in foot, knee or elbow, it is recommended to operate and remove the pieces of overgrowth, and in the hip, malum coxæ senile has been treated by excision. Schleuter, in an article on the whole field of chronic joint affection, holds to the old classification of chronic rheumatism, arthritis deformans with lime salts deposited with changes in cartilages and bones, and chronic vilious synovitis, in which latter condition he recommends operation.

In tuberculosis of the knee-joint Koenig figures on two or three years if conservative treatment is carried out, and he hopes for very little motion and the treatment is expensive. If excision is done, or the joint surfaces and infected bone facets removed, the joint is stiff and the limb short, but we can be practically sure of a quick result and the patient soon learns to get about with good use of the stiff limb. Hofmeister, however, shows the bad effects of resection in early life. There were no contractures in children over fourteen years when operated, but 45 per cent. of the younger ones showed serious contractions (130° or less). If the contractures come soon after operation they are usually in cases where the bone is pathologically softened in one or more places, and in those cases that come slower and extend over many years, come on at the physiologically weak neighborhood of the epiphyseal lines. The flexion is induced by the body weight and the pull of the flexors. It is advised in all cases before the eighth year to divide the flexors and attach them to the extensors. In speaking of the knee it would be well to mention an interesting paper on genu-varum and genu-valgum by Blanchard, in which he claims that the central point or apex of the deformity of typical bow-legs is in the upper tibial shaft, and here is the logical point for correction by the osteoclast. Occasionally the lower femoral shaft is the greatest deformed and in these cases the outer condyle appears to be lengthened, but in many cases studied by x-rays he failed to find a case where the condyles deviated from normal except in conformity to the altered direction of the lower femoral shaft. Another exception is where the outward curve is in the lower third of the tibia. In genu-valgum the majority of the cases show the apex of the curve from three to six centimeters from the head of the bone. Correction here is also at the apex of the curve and done with the osteoclast.

Roentgen rays have given us a great means of diagnosing and locating diseases of the bones, particularly in those cases where otherwise much question of doubt arises. Loedeck has shown the great service radiograms of the spine give in tubercular spondylitis, particularly in the cervical and lumbar regions, though not always so satisfactory in the dorsum on account of the heart and large vessels. It is necessary, however, to take many plates of each case. Beck differentiates osteomyelitis, osseous cyst, osteo-sarcoma and other lesions with skiagrams, and it can determine infectious conditions, not only the size and shape of the sequestra but also the extent of involvement far better than with a probe. Morgan contends that even the nature of the reduction in congenital hip dislocation can be determined by radiographs and enables one to follow the long period of after-treatment, but he cautions that false position of the limbs during the exposure may lead to erroneous interpretation. Gourdon draws attention to the discrepancy which may exist between the clinical findings and the appearance of the radiogram, and explains it by assuming that the hold on the pelvis is maintained in early life, not by a bony socket, but by tissue which is easily penetrated by x-rays. He warns not to judge the result of reduction maneuvers by radiogram alone.

Ludhoff, in writing of the growth and structure of the lower femur and upper tibial epiphysis, studied by means of the x-ray, proves that some appearances, ordinarily considered pathological—*e. g.* protuberances on the condyle between two and four years, and the so-called dark spot on the epiphysis—are quite normal. The epiphyseal lines of the lower end of the femur and the upper end of the tibia remain till the age of fifteen. From two and one-half to eight years

a marked formation of bone is noticeable at these points. From seven to fifteen years the tubercle of the tibia develops rapidly. The middle of the condyles grows more rapidly from two to three and one-half years, the lateral parts in the fourth year, and after that an even growth of both parts. The middle of the condyles appears larger and has less thick, spongy bone than the lateral parts. These show stronger longitudinal trabeculæ. There is a space in front where no vertical trabeculæ are observed. During and after the third year this vertical structure becomes noticeable in the lower femur and upper tibial diaphysis. When both condyles become distinguishable bones, vertical and oblique trabeculæ develop within the inter-condyloid notch. During and after the twenty-fifth year the first appearances of atrophy are seen in the femoral epiphyses.

NEUROLOGY.

IN CHARGE OF

SIDNEY I. SCHWAB, M. D.

The progress of neurology during the year 1903 may be indicated by considering the following channels of publicity: 1. The reports of cases or collection of cases, including statistical studies of various kinds, relating mainly to questions of etiology of diseases and the results of therapy. 2. Studies relating to the anatomy, physiology and pathology of the central nervous system. Under this head will be considered the investigations relating to the nerve cell, the neuron concept and the various newer aspects of this and allied questions which improvements in microscopical technique bring about. 3. Studies which concern themselves with the newer methods of therapy, including under this head all the measures used to relieve or cure nervous symptoms, surgical, chemical, mechanical or psychical. In this division will be included a consideration of such advances in the means of diagnosis which render the recognition of disease easier and more certain. The discovery of new clinical characteristics which make possible an earlier or more definite diagnosis will find mention here. 4. Textbooks and monographs which have either presented the mass of facts of neurology in an entirely novel way, or in a better way, or which have given something that up to this time has not existed in the literature.

A report of the year's progress of this nature will in all probability leave unnoticed many papers and many subjects which may be considered of prime importance, but in general it will show the trend of neurological thought in a far better way than a collection of abstracts.

Probably the most important paper under the first heading deals with the subject of tabes dorsalis, always a prolific source of publication. In each year it is noticed that the papers on this disease outnumber those in any other department of neurology. This paper, entitled "Tabes in Asylum and Hospital Practice," by F. W. Mott,[1] presents facts bearing upon tabes and general paralysis derived from the study of these two types of essentially the same disease as they occur in the hospital and in the asylum. This method of study gives an almost unique opportunity to observe the progress of the two conditions as they

really ought to be observed. Perhaps no more forcible plea for the unity of the two diseases has ever been advanced than this careful study, based upon 74 cases of tabes and a large number of cases of tabetic general paralysis, together with the post-mortem examination of thirty. The keynote of the whole investigation may be expressed in the idea of the author, that etiologically and pathogenetically there is one tabes which may begin in the brain (especially in certain regions) or in the spinal cord, in certain regions, or in the peripheral nervous structure connected with vision, or in the nervous structures connected with the viscera, different types, any of which may be present or be associated with one or all of the others. This paper can be said to contain the sum of all the positive knowledge that we have on the subject of tabes, elucidated in the light which the study, at first hand, of such an enormous material can throw upon it. Attention might be called in this place to the publication in which this paper finds a place. The reports from the laboratory of London county asylums, of which this is the second volume, contain some of the best work which has of late appeared in neurology. It is always of interest to note the fact that the same problem is occupying the attention of workers in various lands. This seems to point to the universal nature of the problem. Curioni[2] takes up the same subject as Mott and comes to the identical conclusion concerning the unity of tabes and dementia paralytica. The single case in the latter article, and the seventy-odd in the former, represent the same sort of proof, differing only in the mass of positive testimony. The French article, however, closes with a reference to the newest theory concerning the initial lesion of tabes. This is quite the most recent development of the subject and represents a rather unlooked for change from the theory that up to this time had received the most general acceptance in France. Thomas and Hauser believed that the fundamental lesion of tabes is a neuritis, presenting lesions comparable to those found in the course of a toxic inflammation of the nerves, and which presents as its most distinct peculiarity a marked election for the posterior nerve roots. Marie and Guillain[3] in the paper referred to have concluded that the initial lesion of tabes is nothing else than a syphilitic lesion of the posterior lymphatic system of the spinal cord. In this connection an article by Orr[4] is of great interest. This is a study on the course of the lymph stream in the spinal roots and cord. The author in his conclusion calls attention to the paper of Marie and Guillain and notes that two of his conclusions support their view. The conclusions are the following: Of the lymph flowing up the posterior roots the greater part passes into the posterior columns, while a small quantity flows into the lymphatic spaces of the pia-arachnoid, covering the posterior and lateral regions of the cord, and that where the fibers enter the cord, at which point their sheaths and neurilemma are lost, they are especially vulnerable to the influence of toxines in the lymphatic system of the roots and meninges. This applies to both motor and sensory nerves. This is certainly an interesting confirmation of what at first sight appears a somewhat fanciful theory. One of the most important papers, from a statistical point of view, that has appeared during the year, is Starr's,[5] on the results of the surgical treatment of brain tumors. For some years past a paper of this kind has been eagerly looked for, because the older statistics did not include the results which the newer surgical procedure in the way of large flap operations had produced. An analysis of 365 operated cases is given. The conclusions, on the whole, are more favorable than would seem to be justified by the consideration of his

figures. Starr points out that the percentage of success is apt to grow larger in the next ten years, this will be due to factors: first, the better localization which is now possible, and, second, the greater latitude given to the surgeon and neurologist by the large bone flap. Starr's pessimistic view in regard to tumors of the cerebellum deserves wide publicity. Nine of his own operated cases were absolutely unsuccessful. He points out the fact that only one-tenth of the cerebellum is open to surgical attack, and it is precisely in this tenth that tumors are least likely to occur. He even goes so far as to say that operations are futile.

Apropos of the point raised on this subject in Starr's paper, an acccount of two successful cerebellar operations by Hudson is worthy of mention. One was a case of cerebellar cyst in the right lobe, on which two operations were done with ultimate recovery. In the second case the tumor was located well forward in the right lobe and successfully removed. Apparent recovery and death due to exhaustion from diarrhea on the eleventh day.

The question of primary bilateral degeneration of the motor tracts of the spinal cord giving rise to the condition of spinal spastic paralysis has ever since the first clinical description by Erb in 1875 given rise to much discussion. This difference of opinion has concerned itself with the two questions of the existence of such a condition and the justification of separately classifying it apart from the other conditions in which a spastic paralysis of a spinal type might be produced. Three papers have appeared this year which throw considerable light on the question, and which tend to support the claim for a separate classification as advanced by Erb. Mills and Spiller[6] describe a case of progressively developing hemiplegia which later became triplegia resulting from a primary degeneration of the pyramidal tracts. The microscopal examination showed intense and long standing degeneration of the right crossed and the left direct pyramidal tracts, the degeneration extending into the pons but not into the left cerebral peduncle. Patrick[7] touches further upon the subject by the report of two cases of chronic progressive hemiplegia, one of which he is inclined to believe would fit in with the case of Mills, while the other is to be classed as a paralysis agitans without tremor. Erb[8] gives an account of the origin of the term spastic spinal paralysis as described by him and analyzes the cases thus far reported and the results of the autopsy findings in those cases which have been worked up. He comes to the conclusion that spastic spinal paralysis is a well characterized clinical type, with a definite anatomical foundation, and, therefore, should be given a place in the classification of nervous disease.

In the review of last year a prominent place was given to the researches of Ceni on the blood of epileptics and the curative effects of the serum which he was able to extract from it. Further work along the same lines has failed to strenthen Ceni's conclusions Sala and Rossi[9] followed out the experiments of Ceni, using much greater care than he did. They conclude that: 1. In no case did the injection of epileptic blood serum exert a beneficial influence upon the course of the disease. 2. No toxic action or other symptom was observed. 3. There was no abnormal variation in the general metabolism of the body. The symptoms present rapidly yielded to the ordinary treatment.

The assertion of Bra,[10] to the effect that in the blood of epileptics, just before and during the attack, an organism could be demonstrated, and that this organism was the specific cause of epilepsy, mention of which was made in the

review of last year, is made the subject of further investigation by Tirelli and Brossa.[11] They fail to confirm Bra's results, which in the nature of things might have been expected. It is true that they have seen in some instances small moving bodies, but they have concluded that they are the results of fragmentation of the morphological elements of the blood which occurs when the blood is being collected. This would seem to set at rest, for a time at least, a theory which has found few supporters, and which is not to be regarded as an evidence of progress in a subject, advance in which is to be hoped for more in the lines as set forth in the study of the hereditary factors or along the lines of Ceni's work. It should be noted here that Ceni has written in support of his original contention a second paper in which he attempts to bring his serum studies in direct relation to the newer blood work of Ehrlich. He assumes that the autocytoxin of the epileptic blood consists of two elements: (*a*) Cytose, alexin, sensitive substance or complement. (*b*) Antibody, intermediate body or sensibilizing substance. This is mentioned more as a matter of interest than as showing any advance in neurology. This sort of work shows very well the interdependence of various lines of investigations.

Spratling[12] considers the results which brain surgery has given in epilepsy, basing his observations on 33 operated cases. His results are sufficiently pessimistic to offer very little hope in the future for this procedure. It is to be noted that his material was the most favorable for surgical intervention, twenty out of the thirty-three cases being traumatic epilepsy. There was out of this whole number only one apparent recovery, and that single one was cured as a result of a gynecological operation. An excellent statistical study is that by Doran[13] on the hereditary factors in epilepsy. An analysis of 1300 cases in the Craig colony showed 46.5 per cent. in which there was a heredity of alcohol or neuroses. A very timely paper on the prognosis and curability of epilepsy by Turner,[14] based upon 366 cases, presents much that is interesting, the chief point of which is that the author regards 10.2 per cent. of epileptics curable. A cured case is regarded as one with a free period of at least nine years. This represents such a conservative estimate that it probably represents the truth.

Myasthenia gravis, to which considerable space was given in the 1902 review, has received but little attention this year. Diller's[15] case of myasthenia complicated by angio-neurotic edema is of considerable interest, though on account of the lack of our knowledge of the pathology of both diseases no definite connection between them can be demonstrated. It is suggested, however, that the sympathetic system has been thought to be at fault in both these conditions. Kohn's[16] report of a case occurring during pregnancy is worthy of note as possibly adding an additional proof to the toxic theory of the disease. A critical paper by Hey,[17] a casuistical discussion of the whole subject, completes the year's contributions to the subject of myasthenia. This is certainly a meager array of papers on one of the most interesting subjects in neurology. A very suggestive point is contained in an article by Sutherland[18] on chorea and Graves' disease. The author believes that the two diseases are somewhat similar affections of the central nervous system, and that in childhood it produces the symptom known as chorea, while in early adult life it is manifested by that known as Graves' disease. That chorea is still to be regarded as one of the neuroses is shown by the report of an autopsy in a case by Kopczynski,[19] in which, beyond some slight chromatolysis, the findings were negative. This appears strange when the fact

is considered that the combination of chorea and other inflammatory conditions is common enough. Such a case is reported by Hohfeld,[20] in which erythema multiforme, chorea, endo- and pericarditis were present in the same individual.

It is certainly difficult to reconcile the negative findings on the one hand and the positive etiological factors on the other. It is very likely that our conception of chorea is soon to undergo a change, chiefly in the recognition of a distinction between a chorea as a pure neurosis and a chorea incident to or caused by the same organism which plays a part in the causation of rheumatism and the allied conditions. Mettler's[21] paper on the relationship between syphilis and chroea is purely a matter of interest. Hysteria, the subject of so much discussion, and so many papers presents little that is new this year. A discussion by Charpentier[22] on Bernheim's adoption of Babinski's attempt to give a new definition of hysteria contains all the data necessary to understand the points at issue. The tendency to make of hysteria a polemical question is to be regretted. This is especially to be observed among the French writers. It is quite clear that a definition based upon symptoms is all that we can hope for just at present and that no satisfactory conception of hysteria can be hoped for until the understanding of the fundamental causes of the disease is a great deal clearer than it is at present. There is a very remarkable observation of Nonne's[23] on the absence of knee-jerk in hysteria. He describes two cases which were under his observation for a long time, there can be no question as to the accuracy of facts noted. This seems to destroy one more of the classical differentiating points between organic lesions and hysteria. It should be noted that Nonne believes that the absence of the patellar reflex is due to the hysteria and not to some intercurrent cause. The efforts which Raymond and Janet are making in differentiating a certain symptom-complex which they call psychasthenia from hysteria will be watched with great interest. Their recent paper on spasms and tremblings in this condition is not at all convincing. It is to be questioned whether at present too fine a system of classification is advantageous. A paper by Westphal on hysterical "Daemmerzustand" and the symptom of "Vorbeiirredens" is here noted because of the interest which of late has been directed to this phenomenon. It consists in the incorrect answers given by a patient to the most simple questions, though such questions are correctly understood by him. Its relation to katatonic negativismus has been brought out. It is certainly a suggestive point, this common symptom in such widely separated conditions as dementia precox and hysteria. The usual number of papers on neurasthenia could be chronicled, but there is nothing that can be said to show any distinct advance. A somewhat unusual aspect of the subject is shown by Cappeletti, who writes on infantile neurasthenia. It has been more or less believed that neurasthenia does not exist in infants or very young children. Two cases are here described: a girl aged eleven, and a boy of twelve. This part of the present review might well be closed by reference to a number of clinical papers which are of importance owing to the rarity of the cases described and to their atypical character, which tends to broaden our knowledge of them. Launnois and P. Roy[24] give an account of the autopsy findings in an acromegalic giant. Collier[25] describes the relative affection of the muscles in progressive bulbar paralysis. Collins'[26] report of nine cases of Friedrich's disease is an unusually illuminating clinical paper. Macintosh[27] notes the mode of onset in eighty cases of multiple sclerosis; Bramwell[28] the relative frequency of disseminated sclerosis in Scot-

land and the north of England and in America. These two papers add considerably to our knowledge of this subject. Muscular atrophy, the subject of so much controversy, has received a number of important additions to the already extensive literature. A case of Erb's juvenile dystrophy with bilateral enlargement of the parotid and submaxillary glands, reported by Clarke;[29] vasomotor muscular atrophy, by Luzzatto,[30] and a case of progressive atrophy with sensory symptoms, by Launnois and Parat,[31] represent variations of the normal type which are of the greatest importance.

No attempt will be made in this review to give an adequate idea of the progress of the anatomy, physiology or the pathology of the nervous system. The amount of work is too enormous to do more than refer in brief to one or two articles which, in a way, have a certain clinical importance. The chief anatomical question which at present interests neurologists is the correctness of the theory of the continuity of the nervous structure. The effect on our present conceptions of many problems of neurology, if Bethe's theories are correct, is altogether a matter of conjecture; therefore a brief reference to the recent discussion on the truth of Bethe's recent experiments might be of interest. Bethe's experiments on rabbits and dogs, from which he asserts that the autogenetic regeneration of the peripheral nerves is proven, has occasioned considerable discussion and criticism. Muenzner[32] published a record of his experiments on rabbits in which, following the procedures of Bethe, he was unable to obtain the same results. He calls attention to the fact that Bethe did not take into account sufficiently the presence of young nerve fibers at the seat of section, and he considers that these might arise from the central as well as from the peripheral stump. He further states that the muscular contractions obtained in the muscle supplied by the peripherally lying nerves are not positive proofs that a nerve severed from its cell can and does regenerate. Bethe[33] replies to this in his characteristic way, pointing out the failure in technique of Muenzer's experiments and the lack of error in his own. It is clear from these two papers alone that there is much that still remains unproven in Bethe's conception of the anatomic continuity of the nervous system. However, it is also true that the idea of the neurofibrillæ as the important element in the nervous structure—modified in some ways, it is true—is gradually gaining ground. Flechsig[34] gives the results of the study of six more brains in regard to the myelinsation of the cortex. He has in this way studied fifty-two brains, and although he has somewhat modified the original areas as marked out on the cortex in his early work, the fundamental facts remain unchanged. In this paper he brings his results up to date. Turner[35] gives the results of his studies on the nerve cell changes in thirty cases of insanity with especial reference to those of the spinal ganglia. This is a very good example of the better sort of work on the pathology of the nervous system. This paper is to be regarded as worthy of mention in an account of the year's progress, because it not only adds data to our knowledge, but it presents in a clear way an account of the changes in the nerve cell which may be regarded as indicative of pathological changes. Two articles on the pathology of multiple sclerosis[36-37] merit attention for the reason that they definitely prove the single known fact in the pathology of this disease, that fact being the non-involvement in the process, whatever it may be, of the axis cylinder, and for that reason the absence of secondary degeneration.

The advances which have been made in the means of diagnosis are mainly due to the work of the French investigators on the cerebro-spinal fluid. The correctness and the applicability of these experiments are still somewhat a matter of dispute, and although at the present time it cannot be definitely said just where the truth lies, yet it is very apparent that the diagnostic side of neurology has been greatly strengthened by the investigations on this subject. The examination of the cerebro-spinal fluid for certain chronic conditions, especially for tabes and dementia paralytica, is not a recent discovery, but it is only in the last year that the work of the French neurologists in this direction has received the attention that it merits. The first reference to work of this nature done in the German clinics has appeared this year; the same is true of America. At a meeting of the Societe Medicale des Hopitaux, in January, 1901, the first reference to the presence of a lymphocytosis in the spinal fluid taken from cases of tabes and dementia paralytica was made by Monod, Widal, Sicard and Ravaut.

A few months later this observation was confirmed by Babinski and Nageotte, who reported that twenty-five out of twenty-six tabes showed a positive lymphocytosis. It is of interest to note that the only evidence of tabes in four of these cases was the Argyle Robertson pupil. Ever since that time reports have appeared either affirming or denying the truth of the original observation. In the year just passed discussion at a lively rate on the subject of the spinal fluid has gone on among the French neurologists. The weight of evidence apparently lies on the side of those who hold the original contention to be true. Armand-Delille and Camus[38] examined thirteen tabetics in the service of Dejerine, and found in only four a positive lymphocytosis. They followed the technique of Widal. The tabes in this series of cases existed from four to forty-two years, so that here the time element cannot play a very important part. They conclude that the examination of the cerebro-spinal fluid in this class of cases cannot be considered an important element in diagnosis or prognosis. Widal, Sicard and Ravaut[39] answer this by giving in great detail the various steps of their procedure, the chief elements of which are absolute cleanliness, great care in centrifugalizing and decanting of the fluid obtained and in the preparation and staining of the slides. In support of their original contention, they give the results of the examination of thirty-seven cases of tabes studied anew for the purpose of this discussion. In all of these cases with one exception a definite lymphocytosis was found. The average number of lymphocytes found in one oil emersion field was from six to ten. The paper is full of interesting data upon the interpretation of the findings, the record of past experiences on this subject, and the various lines of inquiry which have been opened up since the discovery was made. The authors do not consider the lymphocytosis a specific element in tabes or dementia paralytica, but its presence indicates, or, rather, is an evidence of, a simple irritative process. It is not found in tuberculosis, but is found in specific myelitis or meningo-myelitis. If it should be present in a hemiplegia the chances are that the process is syphilitic in nature. In the ordinary hemiplegias the spinal fluid is persistently negative. In cases of old syphilis presenting neither specific lesions or nervous symptoms the fluid in general is found to be negative. If in this class of cases the examination of the fluid is found to be positive, then a very careful examination for some evidence of a nervous process is indicated. An interesting observation relates to the negative finding in a case of cerebral tumor in which there were no evi-

dences of meningeal involvement, as contrasted with the positive finding in a case where there were symptoms pointing to an involvement of the meninges. Many other cases of various nervous affections were examined, with the result that where there was no evidence of meningeal irritation present there was no positive lymphocytosis found. In a series of acute infectious diseases, including tuberculosis, typhoid, etc., a constant negative finding was observed. The substance of this paper can be summed up in the statement that lymphocytosis of the cerebro-spinal fluid points to a meningeal process in the course of chronic diseases. An interesting confirmation of this work from an American source, and probably the first to be published here, is contained in an article by Kramer.[40] In twenty-nine cases of insanity, eleven of which were dementia paralytica, thirteen dementia precox, a positive finding was observed only in the cases of dementia paralytica. The author believes that this is a most valuable diagnostic procedure, and that by it a dementia paralytica can be diagnosed long before the characteristic mental symptoms have developed. Along the same lines Guillain and Parant[41] find that there is present in the spinal fluid of general paralytics a pathological condition of the coagulability of the albumen. In a normal fluid, or in the fluid of other conditions, when the cloud of albumen caused by boiling is precipitated by a sat. solution of $MgSo_4$, and the fluid filtered, no additional cloudiness is caused by boiling the liquid anew. In dementia paralytics, boiling this filtrate results in a renewal of the cloudiness. Schonborn[42] gives a very clear summary of the work already done in the subject and calls attention of the German investigators to the great value of the test. His own investigations, carried out in Erb's clinic, confirms in all details the correctness of the results of the authors just quoted. There can be no question that a remarkable advance in methods of diagnosis has been discovered as a result of all this work. The full value of it can only be known when the procedure is used as a routine measure in all the large clinics of the world. Further investigations along these lines may show that the meninges possess an importance in various nervous diseases hitherto unthought of. If the study of the spinal fluid can give us at all times data on the condition of the state of the mininges, as the discoverers of this reaction assert, then our means of understanding nervous diseases are much augmented. These studies point with no uncertain finger to the important role which the meninges play in tabes, a point long since advocated by Nageotte, whose observations on the pathology of this disease have not received the attention they deserve. A number of papers on reflexes, chiefly relating to the Babinski reflex, have appeared during the year. This reflex has now become so firmly established as an important aid to diagnosis that further work on it is apt to have only a statistical interest. A great many so-called new reflexes have been discovered, but most of them have at present merely a physiological interest. The progress in therapeutics, using its broadest sense, may be indicated by the mention of the growing importance which all so-called physiological methods of treatment have taken in neurology. In the review of last year mention was made of the salt starvation treatment of epilepsy and the importance of that method was indicated. It is a matter of great satisfaction to note the continued progress in this method which the papers of this year indicate. A further advance in the technique of the method is Balint's ingenious device of a saltless bread. This bread is baked without salt in such a way that to every four hundred grams of bread one gram of NaBr is

added. It is to be hoped that this bread, called by him Bromopan, will soon be in the market so that the chief difficulty in carrying out this method in private practice may be removed. Many papers have appeared this year telling of the testing of this method under various conditions. Without an exception the results have been very encouraging It certainly represents the greatest advance in the therapeutics of epilepsy that has been made since the discovery of the efficacy of the bromides. Among the countless numbers of new therapeutic preparations that have appeared during the year, one stands out as being unusually of value and that is the latest hypnotic called veronal. A numerous literature has sprung up on the advantages of this drug. Its chief advantage over the others is that it may be given in small doses and that it has no bad after-effects. Like all hypnotics, however, its habitual use causes a tolerance. The special advantage which is not shared by any other hypnotic to the same degree, is its effect in small doses on the most varied states of mental excitement. It can be used for long periods of time in mania, melancholia, acute alcoholism with the satisfactory effect.

A review of a year's progress would not be complete without some reference to the more permanent additions to the literature of neurology, which can be seen from the various text-books and monographs. Nissl's monograph on the Neuron Theory (Die Neuronlehre) is the most considerable contribution to this subject that has appeared in years, Since Nissl has allied himself to the opponents of the neuron concept an authoritative statement from him has been eagerly awaited. In this extensive work not only are his own views stated, but the whole subject is given a most searching analysis. The various contributions of the neuron concept school are here presented and then exposed to the most merciless criticism. Nissl is a master at this sort of thing, and the impression that remains after reading this book is one very unfavorable to the correctness of the neuron theory. It can be said with justice that this is the most interesting work of the year. Its permanency is, however, less certain, as a work of this sort has only a value as long as the subject is in its formative stage. Bethe's Anatomy of the Nervous System (Allgemene Anatomie und Physiologie des Central Nerven Systems) is scarcely of less importance than the work of Nissl. It contains an account of the author's latest researches on the neuro-fibrillæ and a description of his technique, by which his results have been obtained. A description of his researches in physiology, in which he has attemptod to supplement the facts that his anatomical studies have shown, is of the greatest value and interest. His book also contains a criticism of the neuron theory, but Bethe lacks the dialectic skill of Nissl, and, therefore, this part of his book is less convincing. It is with pleasure that it is possible to notice the work of an American neurologist among the contributions of the year that gives promise of becoming a permanent addition to the literature of neurology. The text-book on organic nervous diseases by M. Allen Starr has been mentioned in the book review department of this journal, and it is here mentioned again merely to indicate that it deserves a place in an account of a year's progress. Flatau, Jacobsohn and Minor have given to neurologists the first satisfactory treatise on the pathology of the nervous system in their very meritorious handbook (Handbuch der Pathologische Anatomie des Nerven Systems). Workers in neuropathology the world over will acknowledge their indebtedness to the authors of this splendid production. A reference might be made here to a new journal which has

made its appearance this year. The *Review of Neurology and Psychiatry* is an English monthly journal patterned after the German *Centralblaetter*, with the added advantage of prompter abstracting and a more just appreciation of the contributions of American and English writers. Such a journal has long been awaited, and its appearance deserves mention.

It can be seen from the work that has been noticed in this review, and such a review must necessarily be incomplete, that our knowledge of neurology has been materially increased by the earnest efforts of many workers the world over. The one fact that can be gained by a consideration of this mass of human endeavor is the increasing breadth of view which has inspired the minds that have been active in the attempt to add something to the knowledge of diseases of the nervous system.

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GENITO-URINARY SURGERY

IN CHARGE OF

H. McC. Johnson, M. D.

Surgery of the prostate during the past year has, perhaps, approached its proper level more than in any year previous. We have seen the gradual change from the suprapubic to the perineal route, and now it seems that the contention lies between the choice of perineal operations.

Rydygier, noticing that it was impossible to avoid opening the prostatic urethra in doing the ordinary perineal prostatectomy, proceeded to work out a new method. Instead of enucleating each lobe entirely, he freed it from all of its attachments except that near the urethra, thus leaving both lobes attached as if by a pedicle. This he clamped by a long pair of forceps at a little distance from the urethra, and parallel to it, in order to avoid, if possible, the ejaculatory duct. The lobes were then cut off close to the forceps and removed. He does not open the urethra, but expects the removal of the lobes to relieve its

cramped condition. Young, in carrying this idea a little further, after dissecting the rectum away from the urethra, opens the urethra and inserts into the bladder a tractor of his own design, which enables him to draw the prostate into good view. He now incises the prostate to the depth of one centimeter on each side of the urethra, to preserve the ejaculatory ducts from the danger of tearing during the process of enucleation. The tractor aids in locating the urethra.

Young attempts by his operation to preserve a man's sexual power, which he considers of much advantage, especially as many of his cases come for operation while still comparatively young. The small bit of the prostate left may furnish sufficient secretion to vivify the spermatozoa.

Both Lydston and Young have devised tractors which are introduced closed into the bladder through the membranous urethra, and afterwards opened for the purpose of pulling the prostate into view.

The matter of incision into the perineum for prostatectomy has returned to the old-time median incision, with the exception of cases where much room is needed, and then the inverted V-incision down to the muscles may be used, the inverted Y and curved incisions having become rather unpopular.

The excellent results Wainwright obtained from a purse string suture for wound of the rectum done while separating the latter from the urethra, will reassure the timid in this operation. He uses a pre-vesical incision into the bladder without opening it, as a help in doing perineal prostatectomy.

The indication for operation on the prostate has reached a happy mean between the two extremes of operating on every prostate and not operating at all, and lies in the maxim that operation should be done whenever palliative treatment begins to be inadequate. Where it is feasible, prostatectomy is the choice of operations, but as this operation can be properly offered to those patients only whose general condition makes them fair surgical risks (Thorndyke, Herrick), its usefulness is limited.

We have heard less lately of the Bottini operation than we did in 1902. It seems to have descended from the little spurt it took, and to have been relegated to the position of a more or less palliative method. It is a significant fact that articles which during the past year have appeared upon the operative treatment of prostatic hypertrophy have had little mention of the Bottini operation in the headlines.

Thorndyke says the operation can be fairly offered as one attended with little risk of life, a short convalescence, and a good prospect of such a degree of improvement as will at least do away with any further necessity for the systematic use of the catheter. Instead of the Bottini operation for those cases that are not good surgical risks for prostatectomy, the suggestion of Smith to do a simple external urethrotomy with drainage through the perineal incision, under local anesthesia, is perhaps preferable until such time as the patient may be in a better condition for operation. Indeed, drainage of the bladder in this way, or suprapubically (Bryson), for a time preliminary to prostatectomy, is quite an advance in the way of handling these cases.

As a means of curing prostatic hypertrophy we have heard very little during 1903 of what are known as the sexual operations; in fact, it is generally conceded that such operations do nothing more than palliate. It has been demonstrated clinically and experimentally, however, that there is a certain reflex action upon the urinary apparatus from these operations, and it has been shown

quite conclusively that this action is expresed in a reflex diminution in the tone of the vesical sphincter, thus relieving the sphincteric spasm influences (Wassiliess).

The hypothesis that posterior urethritis of whatever cause is the underlying etiology of prostatic hypertrophy seems to be gaining advocates. Crandon says that the causative factor is found in slow formation of new connective tissue due to infection, or to infection aggravating a senile degenerative process, and that the gonococcus is probably most often that specific infection.

Operation for cancer of the prostate has been strongly brought forward by Oraison in France, and later by Greene in this country; and while neither adds much to our knowledge for early diagnostic purposes, and both admit the difficulties surrounding them, yet Oraison demonstrates the feasibility of operation before the malignant process has passed the limits of its capsule. He calls attention to the fact that cancer of the prostate, especially in the circumscribed form, is much less rare than has been thought, and urges that while an early diagnosis may be impossible, we may anticipate cancerous degeneration by attacking those cases of hypertrophy which are doubtful and which give symptoms sufficiently painful to warrant intervention.

The operative procedure of making an anastomosis between the vas deferens and the head of the epididymis, which Martin carried out in one case, deserves attention. For obstruction in the tail of the epididymis this anastomosis in his case served to open the way for spermatozoa to reach the ovule. Thorndyke reports a number of cases of varicocele which were cured by ligating the vessels in the inguinal canal. While many of us may not be tempted to emulate the example of Zabludowski in his massage of the testicles and their adnexa, his exposition of his method for maladies of the sexual apparatus in the *Ann. des Mal. des Org. Urin.* is full of interest.

The treatment of stricture of the urethra by electrolysis has claimed the attention of surgeons at intervals, and no one has placed it more in its proper sphere than Moran, who says that electrolysis does not produce a radical and definite cure of the stricture, but is, indeed, a simple, easy, painless and almost bloodless method of enlarging certain strictures, but does not take the place of subsequent dilation to prevent recontraction. The fact that in its application there is an absence of pain, hemorrhage, lying in bed, of the catheter *a-demeure* and of grave complications, will tend to cause linear electrolysis to supplant internal urethrotomy.

Bartrina calls attention to the marked advantage to be gained from external massage of the urethra to facilitate the absorption of the inflammatory product about chronic conditions of that organ. For those disagreeable and usually persistent paraurethral abscesses, Heidingsfeld has employed with good results the injection of a minim, or more, of trikresol into the center of the abscess, with slight reaction and a rapid disappearance of the condition.

Gibson's method of transfixing the prostate laterally from the rectum with a sharp hook in order to make gentle tugs downward on the prostate so as to cause intermittent traction of the urethra in response to the traction on the prostate, which transmits to the finger in the perineum the sensation of tension, thus locating the urethra, will hardly take the place of the older method of a finger in the rectum on the membranous urethra as a means of locating it while doing external urethrotomy without a guide.

After numerous investigations, Monroe throws considerable light upon the lack of danger in operating upon cases of albumin and casts in the urine simply, without systemic evidences of kidney disease, but says the presence of albumin and casts should be a warning to us to be on the lookout for other and more significant signs of organic degeneration, which may prove a serious obstacle to operation or satisfactory convalescence.

The interesting study of the laws which preside over the formation of the sexes is admirably considered by Guiard. After a brief consideration of the principal theories that have had public favor, Guiard leans to that of Thury: that the child will be a female if impregnation takes place before the ovule has has reached a certain degree of maturity; a male when it has passed this degree of maturity. So that to beget a female intercourse should be three or four days before the menstruation, whereas, to beget a male intercourse should be three or four days after its cessation.

The mooted question of when and how to properly teach a boy concerning sexual relations is discussed by Valentine, who has written a pamphlet upon the subject for distribution.

As a routine practice, the French seem to have decided in favor of segregation in preference to ureteral catheterization, the instrument of Luys and Cathelin giving marked satisfaction (Rheaume). Cathelin has improved his instruments, and now furnishes three sizes of membranes for bladders of different capacities. Bryson lays great stress upon the use of the cystoscope in conjunction with the segregator, and says it is of much value in differentiating the bladder condition from reno-ureteral inflammations.

Cathelin's application of epidural injections through puncture of the sacral canal for the treatment of nocturnal incontinence of urine, seems to promise something to those cases which resist other treatment. Indeed, Valentine says that epidural injections with deci-normal salt solution offer the most promising results in abnormalities of urination due to faulty vesicle innervation; that the operation properly performed is in nowise dangerous, is generally not even disagreeable and is easily performed.

Garceau collects sixteen cases of total nephro-ureterectomy with one death only, the results being most excellent, and suggests that, in view of these favorable results, total or partial ureterectomy will in the future be more commonly done for tubercular conditions than in the past. Robinson's excellent article on landmarks in the ureter deserves commendation, not only for the immense amount of work he has spent upon the subject, but also for his demonstration of the different constrictions and dilations which the ureter normally contains. Smith shows that a suture passed through the entire wall of the ureter will stand much more traction than if only the muscles are included, and that the danger of calculous formation about such a suture is theoretical rather than practical. In experimenting upon dogs he demonstrates that after a successful uretero-cystostomy there is, within a certain time, in nearly all cases, some degree of interstitial nephritis set up. He looks for a cause for this in the severing of the vessel and nerve supply to the ureter rather than traction upon it.

It seems that catheterization of the ureters is not entirely innocuous, for out of forty-two cases reported by Keefe, in which subsequent examination of the urine was made, in three cases only was there no change in the urinary constituents. In some cases transient blood and albumin, in others hyaline and

granular casts were found, the patient showing no other evidence of kidney disturbance than that shown from examination of the urine. He is led, however, to believe that with care in the passage of ureteral catheter no injury to the patient is likely to ensue.

That bladder infections are not always due to bacteria carried into it from without has been brought forcibly into prominence by Janet, who divides infections into those of internal and those of external origin, and emphasizes the difficulty we encounter in finding the primary focus of internal infections. Internal infections of the bladder may occur in two ways: through the immediate proximity of a normal organ to a pathogenic one, and secondly, through the mediation of the general circulation. Catheterism of the ureters furnishes the best means of diagnosing bacterial infection of the upper urinary apparatus, but Janet considers this a dangerous procedure, for the bladder cannot be disinfected, and the healthy ureter is thus exposed to contamination. In order to avoid this danger, it is recommended to compare the number of bacteria through culture in the urine which collects in the bladder after it has been thoroughly washed out, with that drawn from the bladder before the washing. We distinctly know that bacteria from certain grave infectious diseases are eliminated through the urine, and it is equally admissible that bacteria from infections of lesser importance, and more localized, are eliminated through the urine also; among these may be mentioned entero-colitis, which must be relieved before the bacteriuria will clear up.

Out of five hundred consecutive autopsies Greene and Brooks found that one hundred and seven showed marked bladder lesions. From their examinations they find that the most frequent cause of diseases of the bladder are lesions of the central nervous system, and that the processes which cause hypertrophy of the bladder wall are inflammatory infiltration, increase of fibrous connective tissue, smooth muscle hyperplasia and infiltration by new growth, the clinical symptoms depending upon which of these factors predominate.

Very little seems to have been written upon the microscopic appearance of the bladder walls in recent acute cystitis. From the study of fourteen bladders with acute inflammation, Motz and Denis demonstrate that in acute cystitis of medium intensity the epithelium is not altered, that the embryonic infiltration is great, but that the inflammatory lesions invade only the mucosa and submucosa, without ever attacking the muscular layers, that the muscle becomes hypertrophied only if the cystitis has lasted a certain length of time. Among the curious things which are abstracted from the bladder, Guisy reports a three months-old babe.

Motz calls attention to the rarity of primary vesical tuberculosis, saying that the bladder lesions are almost always of renal or genital origin. If there is a unilateral tuberculous nephritis, this source of constant reinfection of the bladder should be removed at once, for we know a vesical lesion, even very grave, is not a contraindication of nephrectomy, but is even susceptible of cure, while we do not know of a cure of a tuberculous nephritis clinically diagnosed.

Urotropin, which is relied on so extensively as a urinary antiseptic, is a subject of investigation by Coleman, who lauds its antiseptic qualities, but doubts its efficacy as a uric acid solvent. He finds that its administration is rarely attended by toxic effects, and believes that this toxic action is due to improper dilution of the drug, or to the susceptibility of the patient. Among the toxic

effects he mentions irritation of the stomach, diarrhea, abdominal pains, measle-like rash, headache and ringing in the ears, renal irritation—sometimes with albuminuria, irritation of the bladder, hematuria and hemoglobinuria. However, these toxic symptoms disappear within a few days after the withdrawal of the drug.

In spite of the fact that Johnson, in experimenting on dogs, says that ultimately a fibrous investment forms about the organ after kidney decapsulation, and in none of the cases in which he removed the capsule was there later any considerable anastomosis between the renal and peri-renal blood channels, yet favorable reports from Edebohls' operation continue to appear. Whitacre reports a case which resisted the ordinary treatment of uremia for eight days, but after complete capsectomy began to secrete urine and made a satisfactory recovery. Edebohls stopped the convulsions of puerperal eclampsia in a primipara by kidney decapsulation, which rapidly restored her to complete health. He suggests its use in eclampsia of renal origin where, otherwise, it would be necessary to produce abortion. In a further report he says that out of eighty-one cases operated upon, twenty-two patients are in various stages of satisfactory improvement, nine having remained cured after an average duration of over four years. Ferguson claims priority in recommending surgical treatment for Bright's disease, but credits Edebohls with having worked out the surgical treatment and having promulgated it. He obtained most excellent and astonishingly prompt improvement after decapsulation in two cases of parenchymatous nephritis. While he believes the macular inspection of a kidney as it lies pulled through the wound before the surgeon is of great service in recognizing the state of the kidney, yet the only scientific procedure to pursue to obtain anything like an accurate knowledge of the condition of the kidney under operation is to remove a V-shaped piece of the cortical and pyramidal tissues, and study it microscopically. Believing the immediate good comes from the relief of the tension and the permanent benefit from the establishment of a collateral circulation, he concludes that the operation is practical and effectual, but by no means a panacea for Bright's disease. Two out of the five cases which Blake reports are practically well, one unrelieved, and two died from the operation. Henry's case, in which the patient (although he seemed a good subject for capsectomy) died eight days later without an increase of urine, is not encouraging. Tyson reports a case of advanced nephritis in which medical treatment failed to relieve, but decapsulation of one kidney brought about relief of ascites and anasarca. Two months later the other kidney was decapsulated. After this operation albumin and casts decreased in quantity, and the patient later looked the picture of health. The author is satisfied that the operation is a serviceable one, that many lives may be saved and prolonged, and that even cures may be obtained by its judicious application.

After Edebohls' operation of kidney decapsulation there seems to be quite a response by an increase in the amount of urine and a general improvement in the symptoms of the patient. In view of the fact that a new fibrous capsule appears to take the place of that one which has been removed, it is doubtful whether this new capsule does not contract later sufficiently to interfere with the function of the kidney, and thus subvert the intention of the operation.

Goelet considers prolapse of the kidney to what he terms the third degree—that is, when its upper pole is palpable beneath the last rib—as an indication of

nephropexy. In this position the kidney cannot be properly supported by any kind of bandage or corset. Then, too, prolapse of the kidney may initiate degeneration of the kidney itself, or, through obstructive congestion, cause disease of the female pelvic organs.

Brown reports two cases of movable right kidney which caused glycosuria by pulling upon the pancreas. The sugar disappeared from the urine after successful nephropexy.

Bryson speaks quite extensively of the phloridzin test and cryoscopy. The phloridzin test is not difficult of application and is a very delicate and valuable one for investigation of the functional capacity of the kidney; that urino-cryoscopy in connection with the hemato-cryoscopy is of distinct value in association of the separation of the urines, but these tests should be regarded only as aids to the diagnosis and as in no way taking the place of well-established means of clinical reckoning.

Finker found that cryoscopy of the blood of patients whose kidneys were normal gave surprisingly uniform results, and in those cases where there was a pathological state of the kidney it gave a good estimate of its functional capacity, while cryoscopy of the separated urines from each kidney gave valuable information as to their respective condition. The method has a limited field of usefulness, but is of decided value in cases in which its use is indicated.

Verhoogan obtains definite results from radiography in kidney and ureteral calculi, but the success of the picture depends upon the care with which the exposure is made. It should be sufficiently long to penetrate the thick lumbar tissues, but not so long as to penetrate also the calculous substance and thus efface its shadow. The subject of calculous anuria is treated most excellently in an article by Cabot. He relates a case in which he was able to dislodge a stone from the ureter and force it on to the bladder by external manipulations, and calls attention to the advantage of stripping the ureter after a nephrotomy in order to dislodge stones from it.

According to Thompson there seems to be an internal secretion of the kidneys which prevents undue waste of the nitrogenous tissues of the body, and this characteristic is especially noticeable in the uremia which follows a sudden complete obstruction of the ureters, the symptoms being different from those which we commonly recognize in uremia from kidney disease. In the former there is increased weakness, with twitchings—the subject dying of pure asthenia. Indeed, the uremic symptoms in chronic parenchymatous nephritis and interstitia lnephritis are quite different in kind. As the blood supply to the kidneys is terminal in character, we can expect benefit to come from Edebohls' operation, which allows a new blood supply to the kidney to help absorb the inflammatory exudates in chronic parenchymatous nephritis.

Ohlmacher reports four cases of adrenal tumor of the kidney, and says since the true nature of these adrenal growths of the kidney has been elucidated it is far from permissible to call hypernephroma a rare form of renal tumor.

Croftin finds that administration of the calcium salts, especially calcium carbonate, in fifteen to twenty-grain doses, or more, three times a day continuously, very efficacious in uratic nephrolithiasis.

While favorable results are being reported from Edebohls' operations, it is not of little interest to observe Planer's reported case in which the exsection of a strip of peritoneum from each side of an abdominal incision resulted in the cure of a patient, whose spleen, kidneys and liver were enlarged and the body edematous.

DERMATOLOGY AND SYPHILIS.

IN CHARGE OF

MARTIN F. ENGMAN, M. D.

There is no subject, at present, of such importance to those interested in the treatment of diseases of the skin as that of light. In every issue of the journals devoted to dermatology, light in its various forms occupies a prominent position. Much scientific and experimental study is being expended upon its artificial production; its effect upon pathologic and normal tissue and the various therapeutic indications emanating from the practical application of the result of observation upon these two divisions of the subject.

The discussion of the light phenomena may be divided for such a review as we are writing into three subdivisions: (1) The Becquerel rays, (2) The x-rays, (3) The Finsen light, so called.

1. *Becquerel Rays.*—In 1896 M. Becquerel, a Frenchman, made the discovery that uranium and its salts were capable of giving off rays. From "Pitchblende," the ore of uranium, M. Currie and his wife separated two radioactive substances which they name radium and polonium, while M. Debierne, later, isolated a third radioactive substance, actininium. The rays from these bodies have the power of penetration similar to x-rays and are called radioactive bodies. Aschkinass and Caspari compare these rays with the x-rays and light rays and conclude that they, like the former, exercise an inhibiting action upon tissue growth. They claim that radium emits two kinds of rays—rays which have little penetrating power which are absorbed, and those of great penetration which are not absorbed. The former have a marked bactericidal power while the latter have none.

Walkhoff and Gisel studied the action of the Becquerel rays upon the skin; also Halkin with the salt, radium-barium-bromide. They found that these rays had an effect upon the skin similar to the x-rays. The well-known cases of the burns produced on the arm of M. Currie and also M. Becquerel is cited.

Microscopically the whole of the skin was affected, but the most marked changes occurred in the blood vessels, the walls of which were degenerated; the epithelium was also affected.

As yet only a few tentative therapeutic experiments have been made.

2. *Finsen Rays.*—A very excellent article by F. H. Montgomery appeared in the December number of the *Journal of Cutaneous Diseases*, entitled "The Present Status of Phototherapy." This is a most judicious presentation of the subject and is worthy of the careful study of those interested. Dr. Montgomery has personally investigated in Europe the question of the various "lamps" and gives a fair report upon their relative values.

The greatest obstacle in the more general use of the Finsen treatment is the cost of the apparatus as used at the Finsen institute (Lysinstitute) the length of each exposure, seventy-five minutes, and the expense of a constant attendant. In the last seven years the rearrangement of lenses, etc., has reduced the time of exposure fourfold. The Finsen-Reyes lamps are designed for the treatment of one patient at a time and lessens the amperage used from 80 to 20. This lamp

is smaller and much less expensive than the original lamp, but requires an attendant.

In the effort to invent a lamp by which the cost, maintenance and length of treatment could be reduced, two principles, chiefly, have been utilized. In one class of lamps the electrodes have been made of iron, or other metals, giving light very rich in the ultra violet rays; in a second class the electrodes are of carbon but the source of light is brought much nearer the region to be treated, the condensers dispensed with and the amperage reduced to ten or twelve amperes. Of the second type of lamp, the best known is the Lortet-Genoud and a modification of this by Dr. Sequeira, known as the "London Hospital Lamp." Dr. Montgomery speaks well of this latter lamp, from personal experience. He says: "In both these lamps the carbons may be brought within two inches of the surface to be treated, water circulating between two quartz lenses, cutting off the heat rays. The amperage is ten to twenty and the voltage fifty-five. In a considerable number of cases the results of treatment with these lamps have been very satisfactory and obtained more rapidly and with less expense than with the original Finsen apparatus." He formerly though tthat fifteen minutes exposure, apparently gave the same reaction as an hour's exposure with the Finsen apparatus, but a longer experience with the lamp has shown that while it is unquestionably cheaper and more convenient in every way than the original Finsen lamp, and while it is efficacious in superficial cases, it has not the power of the original lamp and does not reach effectively the deep-seated conditions. This is also the opinion of Sequeira, Leredde, Morris and others. The much spoken of Bang's lamp has iron electrodes and causes quickly a reaction which is more superficial than with the other lamps. These lamps illustrate or verify the dicta of Prof. Finsen that "it is not light alone but a large quantity of light which cures lupus."

Busck claims that he can produce an effect equally as quick with the original Finsen as with the other smaller ones, even those with iron electrodes. Kromayer thought that the reason the rays from the smaller lamps with the iron electrodes did not penetrate was because the large quantity of ultra violet rays they produced caused so much irritation that the exposure could not be sufficiently prolonged, therefore he tried removing the most refrangible rays by filtration. But Busck showed that the iron electrodes gave a light containing few blue, violet and ultra violet rays of short wave-length and therefore could not be expected to penetrate like the longer rays from carbon electrodes. It has been demonstrated by Finsen, Freund, Bie, Stretell and others that light is bactericidal and that the ultra violet rays were the most powerful. Jansen concludes from his studies at the Lysinstitute that concentrated electric light employed for an hour and a quarter will penetrate the skin with bactericidal power to a depth of 1.5 mm. and with a retarding influence upon the growth of bacteria to a depth of 4 mm. Montgomery concludes that of all known methods of treating forms of tuberculosis of the skin phototherapy gives the best results. Phototherapy is, however, not as effective as the x-ray in patches covered by hypertrophic epidermis or crusts or where there is much pigmentation.

Phototherapy has also proven of value in lupus, lupus erythematosis, rosacea, alopecia areata, certain vascular nævi and circumscribed diseases of the skin.

In the treatment of deeper diseases, the results have not been encouraging. Nagelschmidt concludes from experiments upon guinea-pigs with tubercle bacilli that the curative action of the light upon various skin diseases was not due to the indirect destruction of the pathogenic organisms by reactionary inflammation, but by the direct bactericidal effect of light, and that when the tissues were no longer irritated by the bacilli, absorption of the morbid products occurred.

Schmidt and Marcuse state from histological study of the skin exposed to Finsen rays that the changes start upon the surface and slowly reach the deeper tissues, and that the curative action is due to inflammatory reaction and degeneration of the lupoid or pathogenic tissue. This has been the general opinion in respect to all forms of concentrated light, both of the x-ray and Finsen rays. Opposed to this retarding action of light is the apparent stimulation to normal tissue. It is a well-known fact that hair grows more rapidly in summer than in winter, which has been attributed to the stimulating effect of the actinic rays. H. L. Schmidt therefore undertook the study of this subject with the chemical rays as obtained from a Finsen lamp. It has been noticed that hair grew rapidly on the arms of attendants in the Finsen institute. From Schmidt's studies he concludes that this phenomenon of increased hair growth does not occur from direct or specific action of the rays, but to be indirectly due to the inflammatory reaction on the skin and the increased vascularity and better nutrition of the part. It has also been remarked of the x-rays that short exposures at a long distance tends to increase hair growth.

A peculiar atrophy of the skin of the hand is reported by the same author after an exposure to the x-rays for half an hour, which has existed for five years.

X-Rays.—The therapeutic action of the Roentgen rays is still being lauded in their curative action in various diseases of the skin. There has been nothing but increased enthusiasm over this remarkable and easily applicable agent. In the treatment of rodent ulcer and superficial circumscribed diseases no other remedy offers such invariably favorable reports. In acne numerous observers consider these rays the most potent remedy. Nothing entirely new has been written in this field, the literature consisting of reports of cases, reviews of the present status, etc. It can be easily noticed, however, that there are fewer favorable reports upon the action of the rays in visceral carcinoma. Several relapses of superficial growths have been reported and some unique effects of rays, yet, one must feel convinced that the therapeutic action of the rays, in the last year, has made many converts and has placed this form of therapy upon a firmer foundation than ever.

Therefore, we might add, from a careful perusal of several well-written papers, that the general status of the x-ray question has not changed in any of its features from the preceding year. At the meeting of the American Dermatological Association in Washington last May the most conservative admitted the great value of this agent. The excellent papers read by Drs. Pusey, Bronson and Stelwagon are well worthy of careful reading.

Several have advocated preoperative as well as post-operative radiation, especially in carcinoma of the breast. As a result of the former procedure, Dunn and others have seen sloughing, which they attributed to the devitalizing effects of the rays.

Precancerous Keratosis.—Hartzell has histologically investigated five cases

of senile keratoma from five patients, all of whom had also epithelioma. These patches upon the face and hands of old people are familiar to all; they are light brown to black in color, are raised, circumscribed, slightly indurated and may be covered with greasy scales. Various names have been applied to these lesions, verruca seniles being probably the most frequent. These apparently harmless plaques are dangerous, as they sooner or later develop into epithelioma. Hartzell found that in all the cases there was a marked increase of thickness of the corneous layer of the epidermis, the greatest increase being about the follicle mouths. In the basil layer of the mucosa there was always evidence of increased cell activity. In the older lesions there were all degrees of increase in the thickness in the rete up to actual invasion of the corium and beginning epithelioma. The corium was normal, so were the sebaceous glands. The coil glands and their ducts showed proliferation of their epithelium and a cellular exudate about them, showing that probably the coil apparatus plays no unimportant part in these keratoses.

Lupus Erythematosus and Erythemas.—Warde and Galloway, of England, still write spirited articles in the advocacy of their views upon lupus erythematosus and the erythema group. The ideas of these gentlemen upon this subject were fully given in the last yearly review in this journal. Galloway, in his presidential address before the Dermatological Society of Great Britain and Ireland, discussed the subject "Erythemata as Indications of Disease." He refers quite extensively to the cases reported by Osler, which emphasizes the relationship between the erythema group and serious visceral affections. Galloway believes that simple erythema may pass on to true exudative lesions in certain conditions of lowered arterial tone and vitality, thus making necrosis and localized death of tissue possible. Galloway and McLeod report cases demonstrating their opinion that lupus erythematosus is a symptom of general toxemia as well as the simple polymorphic erythema, thus making it necessary in this class of disease to study various conditions from which the eruption might arise. That a simple polymorphic erythema may become a more or less permanent circumscribed low grade inflammation and produce what is clinically known as lupus erythematosus is, therefore, probable.

It is interesting to follow out this train of thought in conjunction with the researches of Phillipson, Toeroek and Vas in the "Pathogenesis of Urticaria." Urticaria, we know, is usually due to a general toxemia, the wheals being generally ascribed to an angio-neurotic phenomenon. Phillipson, in 1900, from experimentation, decided that the wheal was produced by the action of an irritant upon the vessel walls or by circulating in the blood. The researches of Toeroek and Hari go to corroborate the views of Phillipson, that the wheal is an inflammatory lesion resulting from the local action upon the blood vessels of some irritant, and is, therefore, not an angio-neurosis.

If this be true, a great point is gained in explaining the pathogenesis of certain peculiar phases of many so-called angio-neuroses, a word which covers and has covered a lot of ignorance; but is of as much convenience to us as a dark corner is to a lazy housemaid. The modern views of the writers quoted places all this chain of "angio-neurotic" diseases in a better and more reasonable pathologic position and coincides with our researches upon certain drug eruptions Phillipson reaffirms his views again this year in a study entitled "Evanescent Irritative Edema of the Skin."

The Purpuras.—L. Toeroek maintains that all true purpuras are of similar origin, viz., that of some infective or toxic agent in the blood stream; that their clinical differences are only differences in degree of severity; that there is no pathological lesion which is characteristic; and at present the only scientific way of classifying them is according to their pathological cause.

Scarlatiniform Erythema.—Kramsztyk believes, from the cases that have occurred under his care, that there is a *pseudo-scarlatina-recurrens*, not due to a local infection of the skin, but rather a general infection allied to the infectious diseases. In this rare disease the eruption resembles that of scarlatina, but is not preceded by vomiting nor accompanied by sore throat or strawberry tongue; moreover, the secondary desquamation occurs earlier than in scarlet fever, is more copious, and in the form of psoriasis-like plaques, which makes its appearance before the disappearance or even fading of the primary eruption.

Secondary Eruptions in Smallpox.—Schamberg has demonstrated by cultures that the variola lesion is sterile until the eighth or ninth day, when there is an invasion of the ordinary organisms, which produce by their presence various impetigo-like blebs and pustules, or the secondary lesions of the disease. This forms one group, but there are, however, scarlatiniform rashes which appear from the sixth to the thirteenth day, of septic or toxic origin, due to absorption. These rashes are often erroneously thought to be true scarlatina.

Parapsoriasis.—Brocq sums up briefly the salient points of his disease, parapsoriasis, as follows:

1. Almost complete absence of pruritis.
2. Very slow evolution.
3. Distribution in circumscribed, sharply defined patches, whose dimensions are from 2 to 6 cm. in diameter, scattered here and there over the integument.
4. Almost complete absence of infiltration in the derma.
5. A fine pityriasic desquamation.
6. An extraordinary resistance to the local applications usually used in the treatment of psoriasis and seborrheic eczema.

Etiology of Acne Vulgaris.—In 1893, while working in Unna's laboratory upon comedones, the writer of this review saw in his sections of comedones small bacilli which Unna also found in his study of acne lesions. The writer left Hamburg and turned over his material to Monahem Hodara. The writings of Unna, Hodara and Sabouraud have made this bacillus quite familiar to those interested in dermatology. Gilchrist has, for the last few years, been working on the etiologic value of this bacillus and believes that it is the specific cause of acne vulgaris. He finds it virulent to animals and gets an agglutination reaction with the blood of acne patients; none with control blood. His deductions are interesting: viewing acne as a local disease, with a chain of constitutional disturbances from absorption of toxines. Pringle describes a "*Rare Seborrhoide of the Face*," which, in its clinical symptoms is similar to acne rosacea. The principal feature of this disease is the presence of small, pin-point to split pea, nodular prominences upon a reddened base scattered thickly over the face; the color is of a brownish pink. The lesions are follicular and firm to the touch, having a glazed appearance Histological examination showed a perifollicular infiltration about the pilo sebaceous follicles.

Tuberculosis of the Skin.—Herz endeavored to determine the diagnostic value of agglutination in skin tuberculosis. He selected patients with lupus, tuber-

culosis cutis, scrofuloderma, lichen scrofulosorum, but concludes that the serum reaction is not available for the diagnosis of skin tuberculosis. Gilchrist reports an exceedingly interesting case in a girl sixteen years who had ulcerations and scars on the palate, hoarseness, an enlarged gland, with an ulceration involving the skin of the nose. There were no symptoms of syphilis. No lupus nodules could be detected near the patches. The histological architecture of a piece of the lesion on the skin was typically tuberculosis; but, scattered in the section, particularly in the giant cells, were curious bodies which were at first taken for blastomyces. They were round or oval, doubly contoured. Many had undergone calcareous degeneration. There were no tubercle bacilli in the sections. Six months later the enlarged lymphatic glands were removed, and in them were found the calcareous bodies. No bacilli were found in the glands. A piece of gland was introduced into the peritoneal cavity of a guinea-pig, which died and in its liver were found nodules largely made up of similar bodies found in the skin and gland tissue. Two years later the patient reappeared with new lesions and enlarged glands. The latter was removed. Media was inoculated with negative results. A dog was inoculated and killed in two months. A piece of cervical gland showed the same bodies found in the patient. On slant agar a mould grew from this gland. On potato inoculated from the lung of the dog a streptothrix grew, which was fatal to mice and guinea-pigs. Portions of the gland from the dog were introduced into guinea-pigs in which nodules containing the same bodies were produced.

Three years later the patient appeared again with a relapse. It was curetted and a guinea-pig inoculated, which died. The inguinal glands were enlarged and in them many tubercle bacilli were found. Sections from this last relapse showed none of the original bodies.

What were these bodies? Calcareous deposits, degenerating elastic fibers (Hektoen), or a form of organism?

It is peculiar how often blastomycosis and tuberculosis co-exist: "Cutaneous blastomycosis followed by laryngeal and systemic tuberculosis. Death." Montgomery reports this case, but it differs in no essential from several others previously reported by Hyde and himself. The author remarks in explanation of this double infection that it is remarkable that secondary infection with tubercle bacilli does not occur more frequently, as large areas of diseased skin are exposed to the bacteria of the air.

Another case of "Dermatitis Coccidioides" is reported from California by D. W. Montgomery, Ryfkogel and Morrow. The protozoa-like organism, the cause of this disease, shows two cycles of growth, one in an animal body as a sphere between 3½ to 5 surrounded by a double contoured capsule. There is no budding, but formation within of spores. On culture media it grows as a mould fungus.

Leprosy.—Filaretopoulo, after an extensive study of leprosy, says that it is a microbic disease, pre-eminently hereditary and very rarely contagious. The offspring of the leporous may show dystrophic changes from the passage of toxines of the bacilli or they may have the disease by the passage of the bacilli. Filaretopoulo recognizes two forms of leprosy:

1. General leprosy: the tubercular or anesthetic types, due to the presence of Hansen's bacillus.

2. Local leprosy, due to intra-uterine transmission of the toxines. The

author asserts leprosy is curable and is only contagious under proper conditions.

Reshetillo, on the contrary, believes heredity plays a small part in the spread of leprosy, and says there is no hereditary transmission except by infection.

Ivanov made an emulsion of leprous lesions and injected various amounts into the abdominal cavity of guinea-pigs. Even eight months afterwards leprobacilli could be found in large numbers in the liver, spleen, kidneys and bone marrow. After being exposed to a temperature of 120° C. and then injected, the organisms retain their full immutability or stability. Ivanov seems to have demonstrated that Hansen's bacilli multiply in the guinea-pig.

Syphilis.—We have at present two candidates before us ready to be dubbed the "syphilis bacillus." Since the original discovery of Lustgarten, numerous bacilli have appeared upon the horizon, to soon disappear from view, and, like the occupant of the lonely island, we still have hope. But why a bacillus? They (the candidates) are always bacilli. However, Max Schuller gives us two articles "On the Protozoa-like Parasites in Syphilis." These bodies are found chiefly in primary sores. Cultures seem to have been successful in several cases. All forms of the organism are said to be motile. Roux and Metchnikoff caused, by inoculation from a syphilitic ulcer upon the vaginal mucosa of a young chimpanzee, a lesion—a pouched-out ulcer in the center of an indurated plaque. The glands in the groin became enlarged. No eruption had occurred up to forty-six days of observation."

But, to return to the bacilli: Joseph and Piorkowski, reasoning (entirely upon clinical grounds) that the semen of syphilitics contain the bacilli, began their experiments with this secretion upon sterile, but unboiled, portions of placenta. They succeeded in growing from the semen of syphilitics upon this media colonies of bacilli, which presented certain characteristics. They always obtain the same organisms from the semen of rather recent infections, but not from that of cured cases or non-syphilitics. The bacilli have been demonstrated, microscopically, in the semen by staining methods, in chancres, in syphilitic papules and mucous plaques. The work of these authors has been painstaking and seemingly careful, and, although not conclusive, it deserves every consideration. We must say, not so convincing, from this standpoint, is the work of De Lisle, as he, as yet, has not made as many demonstrations to prove his point as the former authors; yet the reasoning of De Lisle, that the syphilitic organism, as it has escaped the most careful search thus far, may be one of the "invisible micro-organisms," seems feasible. He cites the experiments of Roux and others, who proved that certain pathogenic germs or their spores were so minute that they could pass through the pores of certain fine filters; but fluids containing the microbe, when sealed in a collodion sac and then put into the peritoneal cavity of an animal, the contents of the sac became cloudy and, upon staining, small points could be seen, as demonstrated in the exudate from the pleuro-pneumonia of cattle. De Lisle, therefore, by a like method was able to demonstrate a bacillus, and has succeeded in getting it to grow, after passing it through the sac method, on special media. He makes the following statements about this bacillus:

1. This microbe is found in all patients with secondary syphilis.
2. It is agglutinated by the blood of secondary syphilitics.
3. It can be grown after having passed through a porcelain filter.

4. Direct circulation of blood of secondary syphilitics causes ulcers and adenopathy in animals.

5. Inoculations of animals with cultures of this bacillus causes lesions like those of syphilis.

6. It combines with the special sensitizing body (sensibilitrice).

7. Cultures of the bacillus have no effect on syphilitics.

8. The microbe dies with the host.

Sovinski failed to find De Lisle and Jullien's bacillus after careful and exact attempts to cultivate it.

Pini succeeded in finding a similar bacillus after De Lisle and Jullien's methods, and inoculated three non-syphilitics from cultures without results.

LARYNGOLOGY AND OTOLOGY.

IN CHARGE OF

WILLIAM E. SAUER, M. D.

Acute Rhinitis.—Lohnberg, in discussing the etiology of acute rhinitis, says that an ordinary coryza is not a disease *per se*, but is a reaction of the nasal mucous membrane to heterogeneous irritations, local (chronic inflammatory conditions of the nasal mucous membrane, anomalies of the nasal interior, bacterial invasion, chemical and physical irritations) as well as reflex (exposure to cold, drafts). For that reason the only rational treatment is a prophylactic one: strengthening the natural resistance of the organism (regulating the respiratory functions of the nose, hardening the skin).

Walsh states that a "cold in the head" is an inflammation of the mucous membrane of the nose, and is almost surely due to bacterial invasion. Predisposing causes are pathological conditions in the nose (septal spurs, turbinal hypertrophies, polypi, etc.) which disturb the delicate mechanism. There being usually a large collection of all forms of bacteria in the nose, and unless the individual is in excellent health the breathing of very cold air leads to a blanching of the mucous membrane, leaving it in a lowered state of vitality, and when a subsequent reaction sets in a large number of the upper layers of cells are thrown off, and a disturbance of the mucous covering allows the penetration of the microbes into the parts which are favorable to their development. That exposure to cold alone does not produce a so-called cold, but is only a predisposing factor has been repeatedly proven. A striking indication that cold is due to microbic invasion is to be found in the fact that the process is nearly always accompanied by fever.

Ozena.—The etiology of ozena is still a question. Freudenthal believes that the primary cause is the breathing of excessively dry air, which in passing through the nose absorbs all the moisture in the cells, resulting in their death and an atrophy of the mucous membrane, as well as the deeper structures, the odor being due to the bacillus of Abel. Smyes describes a "diphtheria-like" bacillus which is peculiar to and found constantly in atrophic rhinitis. The cultural characteristics are those of the diphtheria bacillus and the organisms are pathogenic to guinea-pigs, producing the same lesions as the Klebs-Loeffler ba-

cillus. If their identity can be established, atrophic rhinitis can be regarded as a chronic nasal diphtheria. Some of the facts which support this theory are: That atrophic rhinitis, like diphtheria, attacks females more than males; it is a disease of early life, and induces a pronounced anemia and leucocytosis. Atrophic rhinitis has been successfully treated by diphtheria antitoxin, also that in atrophic rhinitis the type of the diphtheria bacillus does not alter during the progress of the case; a fact which has recently been found to hold true in acute faucial and nasal diphtheria.

Alexander believes there is a distinct relation between ozena and tuberculosis of the lungs, and for that reason the former should not be considered a benign affection. He found that the physical examination of fifty cases of ozena showed twenty-two to have unmistakable signs of pulmonary tuberculosis, while seven were regarded as suspicious.

As to the treatment of this obstinate affection, the submucosal injections of paraffin seems to have given the best results. Compared reports twenty-seven cases treated by injections of paraffin into the mucosa of the inferior turbinate bone. Of this number thirteen are reported as cured, in the sense of absence of odor and the disappearance of crusts, nine improved and five unresponsive to treatment. The permanency of the cure can only be established by the further lapse of time, though symptoms have been absent in some of the author's cases for ten months. This method is not applicable to all stages of the disease, as extreme atrophy and friability preclude the possibility of sufficient distention of the mucosa for the formation of artificial turbinates. The local as well as the internal administration of mucin is greatly lauded by Stuart, Low, Abercrombie, Wyle and others. Cases of ozena are reported which after resisting years of treatment yielded readily to mucin. The mucin solution should be made by rubbing up one tabloid and one soloid of mucin (Messrs. Borroughs and Wellcome) in two fluid drachms of warm lime water and six drachms of sterilized water, or one drachm of saccharated lime water may be used instead of the plain lime water. This solution may be used as a spray for the nose and throat. The nose should be first thoroughly cleansed and the mucin solution applied morning and evening. From eight to ten tabloids should be given internally, two before and two after meals. Boye reports his results with intranasal vaporization as advocated by Berthold in 1900. His experiments extend over a period of fifteen months. Twenty out of twenty-two are reported as cured, and the remaining two as greatly improved. Brown advocates the use of a solution of one-half of one per cent. pure acetozone in a neutral inorganic oil, which is sprayed into the nose after cleansing with some alkaline solution.

Hay Fever.—The researches of Prof. Dunbar, of Hamburg, have awakened renewed interest in the subject of hay fever. In November, 1902, the author reported that he had succeeded in isolating from the pollen of certain grasses a toxic substance, which, when applied in very small quantities to the eyes or nostrils of people predisposed to hay fever, produced in a few minutes, in a more or less degree, the local symptoms characteristic of the disease, while the same quality applied to the eyes or noses of people not predisposed had remained without any effect. He had also succeeded in producing an antitoxine by injecting the toxine obtained from the pollen of rye, maize and other grasses into the circulation of animals, such as rabbits, goats and horses. The antitoxine, when applied to the eyes or nostrils of hay fever patients in whom the symptoms had been produced

by the toxine, would immediately cause their cessation. In a further report he states that he was able to obtain the toxine from twenty-five different grasses. He believed the toxine to be a proteid, as it gives a distinct proteid reaction. It was also demonstrated that a toxine obtained from one variety of grass could be neutralized by the antitoxine obtained from another variety, leading Dunbar to believe that the toxines are identical. He also succeeded in producing the symptoms of hay fever by injecting the toxine into the arm of a patient. This was followed by considerable reaction at the site of injection. With some of the toxine and antitoxine obtained from Prof. Dunbar, Semon conducted a series of experiments from which he concludes: (1) That there can be no doubt that Dunbar has succeeded in extracting from the pollen of certain grasses a toxine, which, when instilled into the eyes and nostrils of people predisposed to hay fever, produces the characteristic symptoms of the disease. (2) That the toxine, when instilled into the eyes and nostrils of people not predisposed, produces in the majority no symptoms. (3) The effects of the toxine vary the same as there are different variations in different people. (4) The antitoxine causes the disappearance of the subjective and objective symptoms. (5) That in a mixture of equal parts of the toxine and antitoxine, the action of the former is neutralized. (6) That the effects of the antitoxine appear in some instances to suffice to prevent a reappearance of the subjective symptoms, while in others it requires repeated instillations to get a return to normal. In a later contribution to the subjection, Semon reports the result of his observation with the antitoxine on eight hay fever patients. He found that the remedy did not in any sense act as a panacea in any of the cases. It gave relief in some, and appeared to act beneficially in postponing the attack in others. Thost believes that the Dunbar pollen toxine and antitoxine prove conclusively that hay fever is nothing more than an idiosyncrasy of certain persons for certain pollens.

After making a series of examinations of the saliva in certain individuals afflicted with hay fever and those not afflicted with the disease, Kyle believes that in many cases the local irritation in the nasal mucous membrane is brought about by some chemic change in the constituents of the secretion of the mucous secreting glands. Sensitive areas within the nasal cavity or irregularities of formation of the cavities are factors in some cases; yet such areas or irregularities, instead of being etiological factors, are merely more susceptible to the irritation from within. Whether this irritating material, which brings about the attack is not in many cases manufactured within the system, the writer thinks can best be determined by a study of the saliva. That the chemistry of the secretions has to do with the causal factor the author has illustrated in a number of cases, by rapidly changing the reaction of the secretion, either from an acid to an alkaline or from an alkaline to an acid, or rendering it neutral, and in many instances he claims to have been able to either partially or wholly cure the attack.

Septum.—That no one method is applicable for the correction of all forms of septal deviations can readily be seen from the number of operations that are recommended. Mayer and others favor the Asch operation, while Freer and Menzl advocate the window resection of Krieg with their own modifications. In a recent report, Freer publishes his present method, which differs from the former in that he now removes the deviated bony septum with a chisel, Gruenwald's forceps or trephine instead of fracturing it with the Roe forceps. A num-

ber of new instruments have been devised by the author which greatly facilitate the technique of the operation. Freer states that there is no variety of deviation of the septum that his operation cannot remove in a neat and surgical manner without injury to the patient. Douglass has found from his studies on the cadaver that the triangular cartilage is not broken or twisted by the forceps in the Asch operation, nor is its resiliency diminished by the forceps, but he has found that what appears to be a lessened elasticity of this cartilage has been in almost every case due to the incision through the cartilage or its separation at the anterior and posterior border from the bony septum. He therefore recommends separating the cartilage from the spine of the superior maxilla with a chisel and then, if necessary, to crush the septum with the forceps.

Accessory Sinuses.—The diseases of accessory sinuses did not receive as much attention as in the past. This can be accounted for from the fact that these affections are much better understood, both as to treatment and diagnosis. In a recent report, Luc states that since he has adopted the method of making a large opening between the antrum and the nose he has not met with a case of maxillary sinus disease, no matter how chronic, that did not radically heal within a period of four or six weeks. The procedure he followed was the so-called Caldwell-Luc operation. He, however, agrees with Lermoyez, that it is not advisable to adopt the radical operation without first trying other measures. In chronic suppurations of the frontal sinus the Ogston-Luc operation is advised when the sinus is small. When the sinus is large the method of Killian is advocated. Luc has never recorded a single example of an isolated ethmoidal suppuration, and has dealt with this affection only in connection with frontal or maxillary suppurations. The ethmoidal labyrinth can be attacked in one of three ways: (1) Through the normal way of the nose; (2) during the maxillary operation; (3) during the frontal operation. It is not possible to destroy all of the ethmoidal labyrinth through the nasal route, as the most anterior of the anterior ethmoidal cells can only be reached from without. The nasal route is used only in the cure of the nasal myomas and as a preliminary step to the fronto-maxillary operation. A set of special forceps has been devised by Luc for the removal of the middle turbinate bone with the polypoid growths and for breaking down the partitions of the cells. To reach the ethmoid through the frontal sinus the method of Killian is advised as giving the most radical and satisfactory results. Two methods of dealing with chronic suppurations of the sphenoidal cavity are given: One through the nasal cavity and the other through the maxillary antrum, the latter as being the safest and easiest way. The method proposed by Picque and Toubert awaits confirmation.

Calamido and Bitelli report a case of injury to the frontal sinus in which there was a large opening in the anterior wall. From their observations of the case they conclude that normally there is a change of air in the sinus during each inspiration.

Polypi.—That the so-called radical operation for nasal polypi is not devoid of danger is shown by the case reported by Bronner. The patient died about a month after the operation. The post-mortem showed a purulent meningitis and a necrosis of the whole ethmoid bone. The author stated that he knew of two other cases, but could not report them.

Nasal Deformities.—Many cases have been reported in which excellent results have been obtained in correcting nasal deformities by injections of parffin.

The histological examinations of the paraffin "depots" have shown that the paraffin is never absorbed, but becomes encapsulated, and that there is a small cell infiltration with a formation of fibrous threads through the mass. Moskowicz recommends that the injection of Schleich's should precede the paraffin, and after inserting the needle, to be sure to aspirate to see if a vein has been entered in order to avoid embolism. Hurd and Leiser each report a case of total blindness following paraffin injections for the correction of nasal deformities, showing that what was at first considered a very simple and harmless procedure is not free from serious consequences.

Pharynx.—That there is further information to be gained from bacteriological examinations of cultures from pharyngeal exudates than is obtained by merely looking for diphtheria bacilli is pointed out by Hallowk Park. He states that the ulcerative exudative inflammation described by Vincent occurs more frequently than most believe. The finding in smears made from the exudate of the abundant long spirelle and the fusiform bacilli described by Vincent, while at the same time no diphtheria bacilli appear in the culture, a diagnosis of the disease can be made. The exudation due to the thrush fungus may not only be found in children, but also in the pharynx of adults. Inoculation of the fungus, the odian albicans, have been carried out on slightly abraded mucous membranes and the disease produced. The pharyngeal exudates occurring either early or late in scarlet fever are usually not due to the diphtheria bacilli. Class, of Chicago, has described a peculiar coccus, which he believes to be the exciting factor in scarlet fever, but this has not been universally accepted. Park's examinations have shown a great increase in streptococci in these cases, but no organism that can be identified as being different in kind from what occurs in ordinary tonsilitis. In the pharyngeal exudates complicating the various diseases the bacteriological examination reveals, as a rule, streptococci and micrococci. Except to disprove diphtheria, the results of these examinations give little aid in the prognosis and treatment.

Adenoids.—Numerous contributions to the subject of adenoids have appeared during the past year. Redard has again called attention to the frequent coexistence of deviation of the spine, principally cyphoses, with chronic obstruction of respiratory passages. He claims that many authors have adopted his conclusions that this coexistence is not a coincidence; but there is a very evident causal relation, from the fact that a cure of the vertebral deviation takes place under the sole influence of the removal of the nasal and pharyngeal obstruction.

Moeller points out that adenoid vegetations not only occur in the fossa Rosenmueller, but extend downward on the sides of the pharyngeal walls. A report of nine cases is given in which these "lateral" adenoids were removed by means of Mygind's adenotome. These growths are seen at a later period than the ordinary ones, and do not show any tendency to atrophy. The diagnosis can often be made only after the pharyngeal tonsil is removed, and then only by careful digital and post-rhinoscopic examination.

Nikitin believes that adenoids and hypertrophied tonsils represent only a part of a diseased process, as the disease manifests itself beyond the limits of the lymphatic ring of Waldyer and involves the deep lymphatic glands in the neck, the adenoids or tonsils being the points where the process is most prominently developed.

Ptapow, after studying one hundred cases of adenoids in infants, concludes

that interference with nursing, swallowing and dyspepsia are frequently caused by adenoids. Examination is only possible by anterior rhinoscopy. Before the fifth month he does not operate on these cases.

Tonsils.—A plea for the classification of tonsilitis among the infectious diseases is made by Sands. The records of his cases show the incubation period to be from one to four weeks. He has been able to trace the exposure in more than half of his cases to some preceding case. The symptoms and cause also point to the infectious nature of the disease. According to the author, phytolaca is the remedy *par excellence*. One drop of a one per cent. solution is given every hour. If suppuration has already begun the sulphide of calcium in one grain doses is administered.

Pynchon employes the term degenerate tonsil to all the ordinary or commonly met chronic tonsillar diseases. He advises the thorough removal of all of the diseased tonsil, owing to the danger of systemic infection occurring through the lymphatics and that retained secretions may give rise to grave phlegmonous anginas. The electro-cautery is recommended as the dissecting instrument.

Steis has devised an operation for removing the tonsils. The patient is placed on the side under a general anesthetic, the tonsil is drawn out with a volcellum, a hooked knife is passed between the tonsil and the anterior pillar of the fauces beneath the basement membrane. The finger is then introduced into the wound and using it as a blunt dissector the tonsil is turned out.

Damianos and Heerman were able to collect 150 cases of severe hemorrhage following tonsillotomies, of which seven proved to be fatal. They report another case of their own. Death occurring sixteen days after a tonsillotomy.

Burkard says it is not positively known just what vessel or vessels are severed, or if it is always the same one in these cases of severe hemorrhage. He recommends the method of Nicalodoni in controlling these hemorrhages, viz.: to approach the tonsil from without. The curved skin incision is made one cm. below and behind the insertion of the lobe of the ear and carried a finger's breadth anterior to the angle of the jaw. The tonsillar vessels are then caught and ligated and the wound closed.

Peritonsillar Abscess.—Three locations are claimed by Cobb as possible situations of peritonsillar abscess: First, the pharyngo-maxillary fossa; second, the supratonsillar fossa; and third, the areolar tissue about the tonsil. From the anatomic conditions and the clinical appearance, the site of the abscess is believed to be the areolar tissue. The incisions used are an upward and backward one, using a straight knife, for antero-superior cases; while for postero-superior an outward incision between posterior pillar and tonsil, with a right-angled knife, is advised.

Facial Neuralgia.—Porcher believes that the most frequent cause of severe facial neuralgia is a localized inflammation in the nose, antrum and teeth. In support of his views on this subject the author reports six which were cured by intranasal operations for the cure of septal deformities and antral suppurations. In one of the cases the Gasserian ganglion had been removed with only temporary relief. Complete relief followed the draining of the antrum of Highmore and the correction of a septal deflection. Snow states that in the twenty cases that he had observed and treated he had seen none that required excision of the nerve to obtain relief. Each one showed marked intracranial pressure or a collection

in some of the accessory sinuses. This author believes that at least 80 per cent. of the cases were dependent upon intracranial pressure.

Tubercular Laryngitis.—The literature on the operative treatment of laryngeal tuberculosis during the past year is very limited. Lockard advocates the adoption of the same surgical measures that are in use in other parts of the body for the cure of localized tuberculosis, especially if the lung involvement is comparatively slight. The chance of operation depends upon the preference of the individual operator and the lesions. Cutting instruments are prefered to cauterizing agents. The author states that in contrasting the results obtained from surgical measures with published statistics of other methods, the former give the best chances of recovery. Surgical measures are also advocated for the relief of pain in incurable lesions.

Lake reports a case of removal of the epiglottis with the galvano-cautery snare for the relief of intense disphagia. The result was that the pain was entirely relieved and the patient rapidly gained in health.

Carcinoma of Larnyx.—The later statistics of all the operations for carcinoma of the larynx are much better than the earlier ones. Hartley states that the death rate for laryngectomies from 1889 to 1900 were reduced from 44 per cent. to 8.5 per cent. The increase of those remaining cured for three years is from 7 to 15 per cent. Formerly most of the deaths were due to aspiration pneumonia. These are now avoided by operating with the hanging head and the use of the tampon canula, and by suturing the stump of the trachea to the skin.

Freer points out that the earlier the diagnosis the better the chance for the success of operative interference, as laryngotomies and endolaryngeal operations offer better chances of recovery than laryngectomies. Yonge states that the most characteristic symptom of early malignant disease is a persistent dry hoarseness, especially in a person over fifty years of age.

Laryngeal Stenosis.—A valuable contribution to the operative treatment of stenosis of the larynx following intubation and tracheotomy. One per cent. of cases intubated for acute stenosis are found to require continued intubation or tracheotomy thereafter. The cause of the retention is due in the majority of cases to chronic inflammation of the interlaryngeal mucous membrane and hypertrophy of the subglottic tissue, and not, as generally supposed, the result of granulation ulceration on cicatricial bands. Dual advises in the treatment to introduce the largest-size tube possible under an anesthetic. The tube should be specially constructed, the construction below the neck being only 1-32d of an inch smaller than the retaining swell. This tube should be left undisturbed for at least six weeks. Where auto-extubation frequently occurs it is better to split the larynx and retain the tube by a clamp, rather than resort to a tracheotomy. When it is impossible to dilate the larynx, it will be necessary to perform thyrotomy as in three cases reported by this author.

Ear Anatomy.—The experiments of Braunstein and Buhle show that, contrary to Politzer's belief, the vessels of the middle ear entered the promontory but not the labyrinthine capsule.

Otitis Externa.—The tampon treatment of otitis externa furunculosa is highly recommended by Sack, who claims that the failure of others is due to not applying the tampon properly. His method of application is as follows: The canal is cleansed by gently syringing, after which it is carefully dried. A tampon of cotton which has been soaked in a 10 per cent. solution of carbolic acid in glycer-

ine is placed in the canal. This tampon must be so applied that it exerts a certain amount of pressure. If properly applied the pain soon subsides and if rerenewed daily the process will disappear in from three to four days.

Otitis Media.—The necessity of making bacteriological examinations of the pus in all cases of purulent otitis media, immediately after a paracentesis or rupture of the drum membrane is pointed out by Phillips. The streptococcus is the most virulent of all the pathogenic organisms found in purulent otitis media. This is true both as to rapidity of its invasion and severity of the accompanying symptoms. Next in virulence is the diplococcus intercellularis meningitidis. The staphylococcus is generally found in company with the streptococcus. The pneumococcus is more frequently found in purulent otitis media than any of the others, but is not especially virulent.

The use of the gelato-glycerine bougies in the treatment of acute earache in young children is advocated by Richards, especially in the early stages of acute otitis media.

The internal administration of cerivisina is greatly lauded by Molist in acute suppurations of the middle ear. Gray recommends a saturated solution of iodoform in aniline oil in cases of foul-smelling discharges from the ear and in tuberculous cases. Geronhi advises instillations of solutions of formalin ranging from 2 to 10 per cent., depending on the tolerance of the patient. Good results from the use of superheated medicated air (air that is mixed with such volatile substances as formalin and menthol and heated to a temperature of 200 degrees or more) in chronic middle ear suppurations are reported by Beck.

The question as to when the internal jugular should be ligated in cases of intracranial complications of otitis media has recently received a great deal of attention. Ballance says this should be undertaken (1) in acute pyemia and acute septicemia, whether the sinus is occupied by clot or fluid blood; (2) if the sinus wall is gangrenous or its contents are putrefying, unless it is perfectly clear that on both sides of the area of inflammation the lumen of the sinus is completely blocked by non-infected thrombi; (3) if it is proved, or even suspected, that the blood of the jugular bulb is in part or wholly clotted; (4) if the jugular is thrombosed. The author believes ablation of the vein to be better than ligature.

Chronic Catarrhal Otitis Media.—There is still a difference of opinion as to the value of the electrolysis in the treatment of strictures of the eustachian tube; some authors (Duel, Matlock) strongly recommend it, while others (Pierce, Goldstein) claim that equally good results can be obtained with the ordinary bougie.

Internal Ear.—Alt and Wingrave are of the opinion that the abuse of alcohol and tobacco are two factors in the production of diseases of the auditory nerve that do not receive attention. The majority of the mild cases of nicotin neuritis cannot be diagnosed. Wingrave states that deafness due to tobacco smoking may be classified into three groups: (1) Mechanical (a violent negative pressure is exerted with each inspiration when smoking a pipe or cigar, leading to a persistent hypermia of the eustachian tubes). (2) Irritative or catarrhal (the chemical and mechanical irritation of the smoke on the mucous membrane). (3) Toxic or nerve deafness (due to the gradual accumulation of certain toxines of the tobacco in the system).

OPHTHALMOLOGY.

IN CHARGE OF

JOHN GREEN, JR., M. D.

In the following review the editor has endeavored to present a systematic, though necessarily cursory, synopsis of progress in ophthalmology during the past year. No effort has been made to include all the new work of importance, allusion having been made to such papers only as touch upon new concepts or illuminate old ones. Direct reference is made to especially illustrative and striking papers.

Refraction.—The ingenious method of Holth for the objective determination of the refraction—Kinescopy—has undergone further elaboration at the hands of the inventor with a view to making it of successful clinical application. It is improbable that the method will replace any of the objective methods in use at the present time, owing to the fact that it requires intelligent co-operation on the part of the patient, a factor which may be entirely dispensed with in Ophthalmoscopy and Retinoscopy. The latter has been investigated by Jackson to determine the factors necessary to establish it as a method of precision. He enumerates them as follows: Working at a distance of one-quarter to one-half a metre, the accurate measurement of the distance, the adaptation of the source of light and the sight hole to this distance, care to bring the source of light close to the conjugate focus of the retina, means of fixing exactly the direction of the principal meridians, control testing, by departure both ways from the lens, strength, focal distance, or meridian fixed upon, and, in general, precision and exactness in every detail. The well-known experiment of Schreiner (upon which Holth's method is based) has also been utilized in the construction of an apparatus designed to measure the refraction objectively. The fact that the static refraction of an eye is not invariably a fixed and immutable quantity is meeting with wider recognition. Risley, for instance, records cases of change in refraction from hyperopic astigmatism to simple hyperopia, and several cases of alteration in the amount and angle of an astigmatism, According to Bull, compression of the cornea by the lids in the act of frowning may so distort the former as to produce notable changes in the retinal images and hence asthenopia.

But little real advance has been made in our knowledge of the etiology of myopia. Liebreich[1] assumes that the disturbance in the relation of accommodation and convergence by increase in the size of the angle B is due to too great separation of the inner orbital walls and hence an increase in the interpupillary distance. The prolonged controversy as to the value of "full correction" as opposed to "under correction" in myopia still wages. More and more evidence is accumulating to support the contention of Jackson, that "in the great mass of myopes the tendency to increase of refraction is checked and the disability of not seeing well at a distance done away with by fully correcting the error and instructing patients to wear their correcting glasses for distance and near." The operation of extraction of the lens in high grade myopia finds a greater number of advocates than ever before. Emmert reports operation in fifty carefully selected cases with uniformly good results. He limits his cases to those in which

vision remains low in spite of full correction and where strong glasses cannot be worn and the patients desire to see well at a distance.

The danger of post-operative retinal detachment is, however, ever present and will doubtless continue to deter the more cautious operator.

Muscles.—An interesting case of paralysis of both superior obliques consecutive to fracture of the left superior maxilla is reported by Demicheri. Hemorrhage at the apparent origin of the fourth pair is assumed as the most probable lesion. Busse and Hochheim record a case of syphilitic inflammation of the external eye muscles in a patient with intermittent tachycardia. Autopsy showed interstitial myositis and myocarditis. Under the title, "Congenital Defect of Abduction Associated with Retraction of the Eyeball in Adduction," Evans[2] describes a peculiar condition which is congenital and usually confined to one eye. "Attempted conjugate movement towards the unaffected side is associated with imperfect rotation inwards of the faulty eye, its retraction into the orbit and narrowing of the palpebral fissure, and sometimes an upward or downward rotation of the globe. On the contrary, when the patient tries to turn the eyes toward the affected side the defective eye comes forward and widens the palpebral aperture to an extent equal to that of the normal side, but fails to move onward beyond the vertical mesial plane of the orbit." Stieren reports a unique case of congenital absence of both inferior recti muscles. Advancement of a paretic muscle is advocated by Landolt. He believes that tenotomy is indicated in complete paralysis of long standing where the antagonist cannot relax and where binocular vision is absent on account of blindness of one eye. In two cases of paresis of the superior oblique, Jackson[3] displaced the tendon of the superior rectus backward and outward, thus enabling it to assume vicariously some of the functions of the superior oblique.

Lids.—An unusual cause of trichiasis has been observed by Bouchart. A roll of fat situated in the subcutaneous tissues forms a projection near the free border of the lid and displaces the ciliary margin downward or even backward. In one case the author removed a mass of fat as large as a pigeon's egg. Two very interesting cases of spasmodic retraction of the upper lids are reported by Chevallereau and Chaillous. In one of the cases, both upper lids were strongly retracted so that a strip of sclera was visible above the cornea. On looking downward the lids remained motionless. A nevus of the upper lid was vaccinated by a Chinese quack in the hope of removing it or replacing it by a scar. The patient developed fever, a lid pustule, chemosis of the conjunctiva and a membrane on the tarsal conjunctiva, yet, despite these complications, the final outcome was good. The case is reported by Kikutsi, who warns against the procedure as seriously threatening the integrity of the globe.

Conjunctiva.—A number of excellent papers on vernal conjunctivitis have appeared, probably the most exhaustive being that of Posey.[4] Demicheri calls attention to the absence in vernal catarrh of any involvement of the superior cul-de-sac, a fact which is of the utmost importance in the differential diagnosis from trachoma. Nicola disbelieves in the specificity of trachoma, and ascribes the pathological changes to a reaction of the lymphoid stratum of the conjunctiva to any of the causal factors of conjunctivitis. As an example, he cites the instance of a family infected with a Koch-Weeks bacillus conjunctivitis; certain members recovered completely under simple medication, whereas others resisted all treatment, and their conjunctival trouble terminated in true trachoma.

A fleshy, smooth, gelatinous-like mass arose from the conjunctiva in a fifteen-year-old boy. The preauricular and cervical glands were swollen. The tumor was regarded as tubercular and removed, but absence of tubercle bacilli and the negative results of inoculation disproved this diagnosis. A history of syphilis in the father was elicited. Recovery under specific treatment. Four cases of conjunctival streptococcus infection are reported by Poulard. In all there was considerable swelling of the lids. Perforation of the cornea occurred twice, and once there was a small benign ulceration. Etiologically, the cases are grouped by the writer as follows: (1) Streptococcic conjunctival infection of lachrymal origin; (2) infection developed in the course of or after an infectious malady; (3) infection grafted upon another form of conjunctivitis. Fatal hemorrhage from the conjunctiva in a newborn infant after the use of the Crede method of prophylaxis is recorded by Wiener. The possibility of intrauterine gonococcal infection of the conjunctiva receives additional confirmation in the case reported by Armaignac. One hour after birth (which occurred forty-five minutes after the rupture of the membranes) pus was found to be escaping from the lids, and the corneæ were macerated.

Lachrymal Apparatus.—Radical removal of the lachrymal sack as the only means of permanent cure in many cases of purulent dacriocystitis and allied conditions continues to meet with the support of ophthalmic surgeons. Atrophy of the lachrymal gland accounts, in Rollet's opinion, for the ultimate disappearance of the epiphora. To guard against the ever-present danger of severe corneal infection in workingmen the subjects of dacriocystitis, Axenfeld recommends extirpation as a prophylactic. In Schirmer's opinion, excessive epiphora, after removal of the tear sack, is often due to conjunctivitis or entropion. If epiphora persists after correction of these conditions, removal of the lachrymal gland is recommended. Epiphora in babies with the formation of mucocele is regarded by Heimann[5] as due to atresia of the naso-lachrymal duct from retardation in development. He recommends daily massage. Panas describes an ulcerating fungus growth occurring in the region of the lachrymal sack during the secondary manifestations of syphilis. Guibert[6] removed a small tubulated greyish-yellow concretion which microscopically proved to be typical actinomycosis. An interesting case of dacrioadenitis ensuing during the exhibition of moderate doses of potassium iodide is described by Priout. Recovery followed cessation of the drug.

Cornea.—In view of the little known etiology of keratoconus the cases described by Kopff[7] are of great interest. In one case the patient sustained a violent blow on the eye, which was shortly followed by the development of *bilateral* keratoconus and general nervous symptoms. In a second case a unilateral keratoconus developed after a blow on the eye by a fist. Menzies[8] classifies detachment of the corneal epithelium into two main types. (1) The vesicle appears each morning or during the night, or is caused by rubbing the eye. Pain is brief and in the intervals the cornea may appear normal. (2) The epithelium appears like a collapsed blister. Action of the lids on the exposed nerve endings causes the sensation of a foreign body. There is usually a history of trauma. The epithelium does not reattach firmly and is continually torn off by the movements of the lid. Microscopically, changes are found in the epithelial cells. The diagnosis is based on the history and pain on opening the eye in the morning. Frequently, pressure on the cornea through the lower lid will roll up

the slack epithelium and thus permit it to be seen. The presence of pain with little or nothing to account for it should lead one to suspect this condition. Treatment, in the first class, consists of inunction of the cornea with a bland ointment; in the second, removal of the epithelium, curettage of the affected area, bandage and rest. The same subject is discussed by Stood,[9] who states that normally the deepest cylindrical layer of the epithelium adheres to Bowman's membrane by means of little processes which pass into the clefts and furrows of the membrane. After injuries the new epithelial cells pushing in from the margins of the defect rest upon an altered Bowman's membrane and adhesion is less perfect. At night the newly formed epithelium becomes attached to the lid and is loosened and its nerve endings injured when the lid is opened. The vesicle is formed by the passage of liquid from the parenchyma of the cornea. Fuchs describes the results of anatomical examination in nine cases of ring abscess of the cornea. Infiltration extended around the cornea one to one and a half mm. from the limbus and consisted of an anterior and posterior zone. The former which was the chief seat of pus occupied the middle and superficial lamellæ of the cornea. Pus in the posterior zone, which comprised the layers next to Descemet's membrane, was derived from the anterior chamber. Senefe and Villard add to the literature the seventh authentic case of primary sarcoma of the cornea. Microscopically, the tissue was formed by a network of bundles of connective tissue fibers separated by fusiform and round cells.

Lens.—Becker observed the development of cataract in a young goiterous woman. He attributes the trouble to autointoxication, comparable to the origin of lenticular change in Graves' disease and myxedema. A paper of great interest is that by Robinson[10] on "Bottle Finisher's Cataract." The bottle-finisher, in the course of his work, is obliged to expose his eyes to the direct glare of the furnace for at least sixty-six minutes on each shift, or about five and a half hours a week. The disease begins before the age of fifty as a brass-colored opacity at the posterior pole of the lens. The beginning of the trouble at this site is explained (1) by the fact that the nodal point is situated at the exact spot where the cataract begins, and here all the principal rays falling on the lens cross and pass without refraction; (2) all other rays are refracted at the cornea and again at the anterior surface of the lens, so that they are crowded together, and hence are more injurious when they reach the back part of the lens; (3) the bright light of the furnace contracts the pupil, so that the iris shields the periphery of the lens from damage. The disease can be prevented by the workmen wearing dark blue glasses. A small air-bubble-like vesicle containing a cysticercus situated just behind the lens was observed by Guiot. After the ingestion of 1.5 grams of potassium iodide in the course of seven days, a patient of Corda's developed a slight opacity on or beneath the anterior capsule, resembling a semitransparent disk in the center of the lens with an irregular space between its edge and the margin of the iris. On suspension of the drug and without further medication, the opacity cleared up.

Iris.—The subject of tuberculosis of the iris is carefully considered by Prof. Grosz.[11] The affection is described under two forms: (1) A yellowish-grey tumor which later assumes a reddish color is developed at the root of the iris. There is iritis with posterior synechiæ and the appearance of a triangular precipitate on Descemet's membrane. The tumor eventually perforates, usually in the region of the limbus; it is to be differentiated from a gumma, which is

situated on the pupillary margin, and from a sarcoma, which is not accompanied by precipitates or adhesions of the pupillary margin. The second form is simply a miliary tuberculosis of the iris. The course is essentially chronic, and may terminate in occlusion of the pupil, secondary glaucoma and phthisis bulbi. Both forms occur in youth. Enucleation is recommended in solitary tubercle, tonic internal medication in the disseminated type.

Choroid.—Metastatic carcinoma of the choroid is discussed by Oatman,[12] who reports an additional case. The literature contains thirty cases which are considered genuine. There were twenty-two female and twelve male cases, the preponderance of females being due to the fact that twenty of the primary growths were situated in the breast. Both eyes were involved in ten cases. The typical shape is a flat discoid thickening of the choroid with a central elevation of two or three millimetres, gradually sloping off to a thin periphery. The deposit always occurs near the point where a short ciliary artery enters the globe. Vision is destroyed in about five weeks from the appearance of the first eye symptoms. Tension is increased in one-third, normal or diminished in two-thirds of the cases. The average duration of life after the appearance of the first eye symptoms is six and a half months. Enucleation has appeared to increase the activity of the cancerous process and should only be performed when the eye is painful or glaucomatous. Removal of one eye is of no value in preventing a deposit in the fellow eye.

Retina.—An effective therapy in detachment of the retina is very far from being realized, notwithstanding the claims of enthusiastic supporters of new methods. The operative method of Deutschmann, which a year or so ago was regarded with some favor, was violently attacked at a meeting of the Hamburg Medical Society in April, the general feeling being that the operation did more harm than good. The special dangers are infection, hemorrhage and the production of cataract. The value of subconjunctival injections is still *sub judice*. Temporary improvement has certainly followed their employment. In a case of retinal detachment in an eye myopic nine dioptries (the fellow eye being amblyopic) Mueller[13] performed the following rather formidable operation: Having resected the outer orbital wall, after Kroenlein's method, he incised the orbital periosteum, laid bare the rectus externus and inferior oblique and severed them. A strip of sclera at the outer side of the globe was excised and five sutures inserted in the margins of the cut. A knife was then introduced through the lower angle of the scleral wound, thus evacuating the subretinal fluid. The retina became reattached, the field of vision became normal and vision rose to "fingers at three metres" (a small central scotoma preventing still greater improvement). In fracture of the base of the skull and in subarachnoid hemorrhage Fleming[14] found retinal hemorrhages the rule and regards them as of considerable diagnostic importance in this condition. In certain cases of atrophic retinæ, retinitis pigmentosa, retinal degeneration in high myopia and in choroiditis and tobacco amblyopia, Doyne tried the experiment of feeding the patient with raw retinæ of sheep and oxen, giving from six to nine daily, and found positive improvement in function.

Optic Nerve.—Mayeda[15] describes a membranous formation of connective tissue at the disk and adjacent portions of the retina, which he regards as a congenital remnant of the connective tissue around the hyaloid artery. A case of cerebral tumor unaccompanied by choked disk is described by Anna. At autopsy

the right frontal and temporal lobes were found softened, the cavities being surrounded by gliomatous infiltrations. This formation of cavities, by preventing an increase in the intracranial pressure, accounts, according to the writer, for the absence of papillitis. Sachsalber describes a case in which a choked disk developed six days after the successful evacuation of a cerebral abscess. The case, in the writer's opinion, speaks for the theory of toxic origin of choked disk. Nicolai[16] has discovered a band of fibres encircling the head of the optic nerve, which, judging from the form of the individual cells and their tinctorial reaction to v. Gieson's stain, is thought to be a band of smooth muscle fibres.

Sympathetic Ophthalmia.—Nothing positively new with regard to the etiology of sympathetic disease has appeared in the past year. Roemer regards the disease as due to an infection pathogenic for the eye only which reaches the fellow-eye by metastasis. Pusey suggests that the lining cells of the ciliary process and iris may give rise to a specific cytotoxin, which, circulating in the blood, picks out the corresponding cells of the fellow-eye. With reference to therapy, two interesting cases are reported by Valois,[17] in which a solution of cyanate of mercury injected into the orbital tissue after enucleation of the offending eye resulted in perfect cure after other means had failed.

Glaucoma.—Levison demonstrated in many eyes affected with primary glaucoma proliferation and condensation of the connective tissue in the ciliary body, thus altering the position of the iris and mechanically obstructing the spaces of Fontana.

Injuries.—Ramas records an unusual case of prolapse of the lachrymal gland through a cut three cm. long just below the supraorbital ridge. The gland was replaced and the structures about it sutured. No reaction followed, and the patient was discharged at the end of a week with glandular function unimpaired. Salzmann[18] observed a rupture of the optic nerve following a gunshot wound of the temple. The rent extended longitudinally and could be traced twelve D. (four mm.) behind the fundus level. The horrible results that may attend the unskilful use of the obstetrical forceps is well illustrated in a case reported by Koppen, in which the instrument completely evulsed the globe. Fejer notes the disappearance of the iris and dislocation of the lens into the vitreous *without injury to the sclera*, following a fall on the eye. In some injuries of the cornea, trophic phenomena which resist antiseptic medication, give rise to much irritation. In such cases Roque has found aspirin of service. Schwarz outlines his treatment in injuries of the eyes by chemicals: Use as soon as possible a chemical antidote, and then irrigations with water; when the agent is an alkali, use acetic acid, one per cent., or dilute hydrochloric or citric acids; when an acid, two per cent. solutions of carbonate of soda; when a salt, olive oil.

Operations.—The operation of couching (depression of the opaque lens into the vitreous), which for many years has been relegated to the limbo of outworn surgical procedures, has recently been revived and its indications formulated. These are, according to Bourgeois, (1) when an expulsive hemorrhage is liable to occur, (2) when there is grave danger of infection, (3) in patients with little self-control, such as the insane, and (4) in patients in whom coughing or other involuntary efforts may appear. The operation is contra-indicated in soft cataracts and in glaucomatous eyes. Preliminary iridectomy is regarded as an important essential. Every ophthalmic surgeon has encountered cases of senile

cataract in eyes affected with a chronic conjunctival discharge which persisted despite the most vigorous treatment. Operation under these circumstances is at best rather hazardous and any procedure which tends to minimize the danger of infection is sure to be welcomed. In such a case Ellett[19] incised the conjunctiva around the cornea as if for an enucleation, dissecting it upward and downward with a blunt probe. The lens was then rapidly extracted by the combined method. The edges of the conjunctiva were drawn together over the cornea and united by horizontal sutures. Iodoform was dusted thickly on the line of union. The eye was irrigated with boric acid every hour. The stitches were removed on the fourth day, the conjunctiva retracting sufficiently to expose one-fourth of the cornea. The corneal wound was found closed and atropine was instilled. Three days later the cornea was entirely exposed, and the conjunctiva had become reattached in its normal position.

It has long been recognized that the concave socket after simple enucleation does not form an ideal bed for the support of an artificial eye. The past year has been very prolific in the invention of operations designed as substitutes for the classical operation. Clarke unites the external rectus to the lower margin of the conjunctival opening, the internal rectus to the upper margin, and finally passes two sutures through the upper and lower margins of the conjunctival opening. Snell unites the externus to the internus, then the superior to the inferior rectus. The conjunctiva is united by one or two sutures. "Section of the eye" is proposed by Hall. The front of the globe, including the ciliary body, is removed, section being made twenty-five mm. behind the sclero-corneal junction. The vitreous is evacuated, the retina and choroid removed with a curette. A circular incision is made in the sclerotic as close as possible to the nerve, which is drawn forward and divided. Sclerotic and conjunctiva are closed vertically in order to preserve the normal tension of the lateral recti muscles. Nicati removes the posterior half of the globe up to the insertion of the recti tendons, after division of the internus. [The preservation of the ciliary region and cornea intact would hardly afford immunity from sympathetic disease.—Ed.] Barraquer implants a ball of fat taken from the gluteal region in the orbit, and sutures the conjunctiva and recti tendons over it. Suker and Ramsey give the technique of paraffine injections into Tenon's capsule after enucleation. Oatman uses a paraffine ball in place of the glass globe in Mules' operation, his object being to use a material that may be partially removed in case a fistula should develop. Maxwell has further developed his operation to enlarge a contracted socket. A semilunar flap of skin is dissected up from the cheek just below the eye, except at the center. It is then passed through an incision in the lower part of the socket, and sutured in position. Wood has practiced exsection of the tarsal cartilage in cases of old trachoma not amenable to other forms of treatment. Peritomy (excision of an annular strip of conjunctiva adjoining the cornea) has proved of great value in Snell's hands in a variety of inflammations of the cornea.

Therapy.—In scotoma scintillans of retinal origin the pain is located just above the eyebrows. In such cases Capauner has permanently relieved the symptoms by means of ocular massage. In vernal conjunctivitis Terson recommends a two and a half per cent. ointment of yellow oxide of mercury in lanolin or oil of vaseline. Protargol, cocain, suprarenal extract and the treatment of associated nasal affections are useful adjuvants. The masses may be removed

by galvano-puncture. Internally, arsenic is of service. It is to be hoped that the excellent result following the use of the x-ray (case reported by Allport[20]) may lead to the adoption of the method in other cases. The favorable results of radiotherapy in trachoma have been dwelt upon by a number of authors. Mayou notes disappearance of the granules, leaving a supple, non-scarred, non-contracting conjunctiva. Stephenson and Walsh,[21] in a series of cases treated only one eye, the fellow being left untreated as a control. In every case the eye exposed to the rays rapidly improved, the fellow eye remaining *in statu quo*. Stephenson also has used radiotherapy with complete success in a case of tuberculosis of the conjunctiva. Three cases of epithelioma of the eyelids were successfully treated by Sweet.

Sodium salicylate in large doses (gr. 1 to each pound of body weight every day) is strongly recommended by Gifford[22] in non-specific iritis, cyclitis, scleritis, episcleritis, acute retrobulbar affections of the optic nerve, sympathetic ophthalmia, traumatic iritis or cyclitis, interstitial keratitis and herpes cornea. The factors explaining the drug's action are (1) local depletion due to general capillary dilatation; (2) secondary diaphoresis. The drug is also highly praised by Gradle. Hetol, in 1 per cent. to 5 per cent. solution, is very efficacious in various affections of the cornea, according to Lezenius. In two cases of tubercular iritis Handmann[23] obtained a permanent and complete cure by injecting tuberculine in the forearm. Corneal cloudings are greatly benefited by dionin. V. Arlt reports five cases under treatment from three to twenty-one months, all of which were greatly benefited, and in some vision was restored to normal. Jacqueau recommends methylene blue 1-1000 in affections of the cornea, in blennorrhœa, and as a prophylactic in variola. Cuprocitrol is favorably regarded by Bock in the stage of pannus and scar formation in trachoma. Constantinesco[24] reports the flattening of recent total corneal staphylomata after extraction of the lens. Trousseau has used 15 per cent. ungt. collargol inunctions in suppurative choroiditis, puerperal sepsis, apparently beginning panophthalmitis in pneumonia, and in iridocyclitis after extraction, with excellent results after other means had failed. The increased efficiency of atropine when combined with adrenaline is well known. Mengelburg[25] calls attention to the fact that the combination may produce poisoning when atropine alone does not. MacCallum[26] notes increase in tension in five cases of glaucoma after the instillation of adrenaline. Salomonsohn finds that 3 per cent. scopolamine is equivalent to 15 per cent. atropine in efficiency, and recommends it to rupture firm adhesions in iritis. In optic atrophy and retrobulbar neuritis Shiele has used with good results a 5 per cent. solution of sodium iodide hypodermically in the temporal region. To dissolve the calcium carbonate and phosphate found in many old corneal lesions, Mazet[27] employs an aqueous solution of lithium benzoate. In the tardy manifestations of ocular syphilis Abadie has found intravenous injections of cyanide of mercury incontestably superior to other methods of mercurial medication.

Pathology.—Parson[28] wounded a monkey's retina with a Graefe knife. After three weeks the optic nerve treated by the Busch-Marchi method showed the following: (1) the degenerated fibres retain the same position along the entire course of the nerve; (2) there are always homonymously situated degenerated fibres in the opposite nerve which are probably collaterals of the injured side; (3) macular fibres pass from the temporal side to the centre of the nerve; (4)

there is degeneration in both tracts; (5) fibres spread out farther back in the tract. The star-shaped figure at the macula in albuminuric retinitis is thought by Koppen to be due to exudates and old hemorrhages between the radiating fibres. Wessely's[29] experiments tend to disprove the alleged lymphagogic influence of subconjunctival injections. He finds that injected solutions are rapidly diluted by transudations of water from the conjunctival blood vessels, that they do not accelerate the osmotic current of the anterior chamber but act reflexly on the ciliary vessels to increase the amount of albumin in the anterior chamber. Graflin[30] believes that the corneal endothelium plays an important role in the physiology and pathology of the cornea. Parenchymatous keratitis, clouding of the cornea after secondary glaucoma, iritis and iridocyclitis depend on an affection of the endothelium. Panas discusses dermoid oily cysts, which are located in the prelacrimal region of the orbit or at the external angle. The sac is smooth, tense and fluctuates and contains oleaginous material. The deepest portion is true skin, often adherent to the periosteum. The superficial portion is thinner, lacking in epithelial elements. The following points of interest with regard to primary extradural tumors of the optic nerve are noted by Parsons:[31] The disease begins, as a rule, before the age of ten, the most prominent symptom being exophthalmus. Failure of vision is slow and is accompanied by choked disk, to be followed by post-neuritic atrophy. Nearly one-half of the recorded cases were endotheliomata. Growth is slow and malignancy is comparatively slight. In view of this fact, Kroenlein's operation with retention of the globe is usually indicated.

Eye and Nose.—According to Axenfeld orbital inflammations originate chiefly in the periorbital nasal sinus. In chronic frontal sinusitis, the radical operation should be performed after an evacuation of pus through an incision along the eyebrow. In acute sinusitis, the original trouble may have healed and hence does not require any interference. The infection is probably conveyed along the emissaries of the bones. Injury to the superior oblique is reported by Quintela in trepannation of the frontal sinus by Luc's method. The fact that paraffine injections for the correction of nasal deformities are not devoid of danger is illustrated by the case reported by Hurd and Holden.[32] In this case the paraffine was introduced into a vein and was followed immediately by blindness. Ophthalmoscopic examination showed general bloodlessness of the retinal arteries: *i. e.*, embolism of the central artery. In spite of immediate and energetic treatment the condition failed to improve. Pollatsek reports a case of atrophy of both optic nerves due to extensive syphilitic destruction of bone in the sphenoidal antrum.

Eye in General Disease.—Mandonnet reports a case of paralysis of the soft palate and of accommodation after a severe attack of parotitis. Chance enumerates the following ocular complications of variola: corneal ulcer, pustulation of the lid borders, pustules of the lachrymal passages, periostitis with caries of the orbital borders, parenchymatous keratitis and serous iritis. Surgical treatment in Basedow's disease offers a better prognosis than any other form of therapy. Kocher operated fifty-nine cases of true Basedow's disease with complete cure in 76 per cent. and decided improvement in 14 per cent. The operation is performed under cocaine anesthesia when the cardiac and psychical irritability is at a minimum. Gilfillan[33] observed a panophthalmitis developing on the twenty-sixth day of typhoid fever. Marcel says that the amaurosis which

occasionally follows measles may be transitory or permanent. In the case reported, blindless developed during convalescence and was found to depend on grave alterations in the retina which finally came to have an appearance closely resembling that of retinitis pigmentosa. Terson observed unilateral detachment of the retina in two cases of severe tertian malarial infection. The eye changes in ankylostomiasis consist, according to Nieden, in pallor of the conjunctiva, a peculiar lustre of the sclera, white disk and retinal hemorrhages (situated mostly in the periphery of the retina). Weil examined the eyes of sixty-one inmates of a prison affected with scurvy and found ocular complications in five. In three cases optic neuritis, in two macular retinitis. De Schweinitz[34] calls attention to the changes in the eyeground in arterio-sclerosis and hence in many cases of nephritis. These changes include (1) undue tortuosity and beading of the retinal arteries; (2) increased distinctness of the central light streak, loss of translucency, anatomical changes in the arterial walls; (3) undue tortuosity and beading of the veins and impeded venous circulation where a diseased artery crosses the vein, and anatomical changes in the walls; (4) edema of the retina; (5) retinal hemorrhages.

New Instruments.—Jannsen has constructed a siderophone (described by Widmark) to aid in the detection and location of iron or steel particles within the globe. When the instrument is approached to an iron splinter, a sound is heard in a telephone receiver. The instrument is less delicate than the siderоscope, but is more convenient. Galiano has devised an oval perforated silver tube for use in irrigating the conjunctiva in ophthalmia neonatorum. An instrument somewhat resembling a banjo bridge has been devised by Jackson to measure the prominence of the globes. Priestley Smith's balance for knife testing consists of a see-saw, one arm bearing the ordinary drum covered with kid, the other marked in grams and carrying a sliding weight. To test the point of a knife the drum is placed with the leather horizontal. The weight is moved down the scale until the point gently pressed down in the transverse diameter of the drum-head, persistently punctures the leather. To test the edge, the knife is passed through a slit in the leather placed vertically, and the weight moved down until gentle pressure cuts the kid, instead of depressing the arm bearing the drum-head.

Miscellaneous.—The second case on record of unilateral quinine amblyopia is reported by Westhoff. After observing an eclipse with the unprotected right eye a patient of Winselmann's developed ocular pain followed by the appearance of central scotoma. Vision was reduced to "fingers." Ophthalmoscopically was seen a dark red spot near the macula. The wearing of yellow glasses has been found experimentally to increase by one-third the accuracy of artillerymen in all sorts of weather and under different degrees of illumination. Spiller notes three cases of paradoxical reaction of the pupil which became smaller on fixing a far object, larger on fixing a near object, and when the globe was turned down and in (the fellow eye being covered). Spiller does not believe that this anomaly is necessarily indicative of nervous disease and can offer no satisfactory explanation. In cases of tobacco-alcohol amblyopia De Schweinitz and Edsall noted a more or less marked urobilinuria. With the disappearance of enterogenous decomposition products vision invariably improved. They believe that a persistent amblyopia may depend on a secondary nutritive disturbance.

Schoute notes paresis of accommodation in a patient, who had been put on cinchonine because of an idiosyncrasy for quinine.

The possibility of some improvement in the vision of eyes amblyopic from disuse, either when the necessity for improvement in vision has obtained (as in the loss by accident of the fellow eye) or from persistent practice with the amblyopic eye, has formed the basis of a number of papers (Buchanan, Friedenwald). Gunn classifies functional or hysterical amblyopia in two divisions: (1) idiopathic, occurring usually in women, rarely in children; (2) traumatic, which may obtain in both sexes, but always in adults. Delayed visual consciousness in very young children may be due to the retarded development of higher association fibers. In adults the condition is to be explained on the assumption of a temporary loss of the power of conduction between the lower visual centers and the conscious centers and may be an obscure early sign of real organic disease. A unique case of amaurosis from mushroom poisoning is recorded by Giulio. There was pain on moving the globes, vision was reduced to light perception and the pupils were dilated. Ophthalmoscopically the disks were found anemic, the arteries shrunken, the veins distended. Under tonic and roborant treatment internally vision finally recovered to three-tenths.

Among the books on ophthalmic and related topics appearing during the year may be mentioned the following: "The Theory of Skiascopy," by Dr. Theodor Wolff; "A Biography of Hermann v. Helmholtz," by Leo Koenigsberger; a "Treatise on Disease of the Eye, Nose, Throat and Ear, for Students and Practitioners," by various authors, edited by William Campbell Posey and Jonathan Wright; "Grundriss der Pathologischen Histologie des Auges," by Dr. S. Ginsberg; "Development of the Vitreous Body," by Dr. M. v. Lenhossek; "Ocular Therapeutics," by Dr. A. Darier, translated by Sydney Stephenson; "Die Blindenverhaeltnisse bei der Lepra," by Dr. med. Lyder Borthen; "Squint, Its Causes, Pathology and Treatment," by Claud Worth; "Refraction and Motility of the Eye, for Students and Practitioners," by William Norwood Suter; "Collected Essays on Physiological Optics," by Arthur Koenig; "Ocular Therapeutics," by Dr. Victor Hanke; "Injuries of the Eye by Gunshot," by Dr. Lindenmeyer.

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EDITORIAL COMMENT.

MEDICAL PROGRESS NUMBER.

There appear each year in Germany collections of abstracts in medicine and in some of the specialties, called Jahresberchte. Into these huge volumes are massed together, with absolutely no critical selection abstracts of all articles that have appeared during the year just passed. For bibliographic purposes such collections are invaluable, but they do not serve to indicate in any way the line of progress nor do they point out the papers which have contributed to the advance, if advance there be, in any given department of medicine.

From such a collection some mind trained in critical analysis and whose authority would stamp his opinion with a certain value, might pick here and there such contributions as appear to him to be of greater importance than the rest and show wherein progress has been made. Critically trained minds are rare and those who have them find little enthusiasm for work of this sort. For, unlike literature in general, medical literature has found no place for the professional critic. In this way minds of a less notable sort are engaged from time to time in this process of weeding the bad from the good, the striking from the ordinary, and in a more modest fashion present the progress of a year's work in their special departments. To allow the work of one year to filter through their consciousness keyed to as critical a pitch as possible and with an equally generous inclination to be fair and discerning is their task. From some such standpoint as this the reader is asked to consider the progress papers here presented, and he is also asked to remember that criticism, after all, is a most personal art and the more untrained the critic is the more personally representative are his opinions likely to be. To determine what progress is, to separate a piece of work from

the glamour which may surround the name of its author, to choose between what perhaps may be new but useless and what is old but confirmative, are tasks which the stoutest medical heart might shrink from, and it is only through a realization of the difficulties that such work carries with it that a fair judgment of these reviews can be arrived at. It must likewise be remembered that medical articles are written, published and widely quoted for the matter of that, without possessing one element that justifies either their existence or reference to them.

The number of medical journals has become so large that to fill their columns the legitimate productive powers of medical writers are taxed many times over. To provide material for these empty columns papers are written by men whose names should stand for better things, solely to fill a given amount of space. So there is to aid the critical reviewer no standard of higher journalism as there is with literature in the other sciences and no assurance that a good name will mean a good paper. In view of these things it is little wonder that the wavering line of progress is often lost sight of amid the ruck, and less strange is it that no two men would pick out a path in the same direction, nor would they make it out of the same material.

It is well to consider the purpose behind the attempt to present in a few pages the essence of this large amount of human activity and to consider also what is meant or rather what may be meant by progress as it is used to indicate the special purpose of this second January number. There are at least two sources of appeal in the mind of every man whose activities find in medicine their legitimate outlet. There is the desire to know how much the knowledge of medicine has been increased, and there is the pride he feels at such an increase. It is to satisfy in some measure these two tendencies that a review of the advance in knowledge in a certain given interval of time is of value. To know that medicine in general and its departments are richer in available data founded upon correct observation and interpretation of facts is a source of satisfaction quite apart from one's own individual efforts whatever they may be towards this end. To set down at the end of each year the results of widely scattered workers in different parts of the world, and to indicate by name such of them who have contributed most to this advance, gives to one far removed from personal contact with this activity a sense of fellowship in the work which nothing else will. It matters little if this piece of work or if this or that name is omitted or unduly emphasized. For the moment, at least, what is set down is the actual thing, and as a good story is always true as long as the telling of it lasts, so these reviews are true as long as the reader of them chooses to believe them so. To define what is meant by progress is a very difficult matter and one so illusive that it almost escapes our means of identification. Knowledge is added to by no known laws and there is no known unit of measurement of its advance. The much vaunted truth of to-day may be the jest of tomorrow, and the scorned theory of to-day may be the known fact of the future. Many a forgotten piece of work passed over in these reviews as unworthy of mention may be the beginning of an inquiry destined to bear fruit in the future. There is no permanency in the results of human effort, but there is in the way such efforts are brought about. Progress, that is the true progress, is nothing else than an improvement in method, and we must look for evidence of this progress, not in the facts which are set down, but in the spirit and the method which these facts are conceived. Facts exist as units with no continuity of existence; method, however, possesses the quality of inherited tendency and transmits from one set of workers to another and from one generation to another the materials out of which advance comes about.

In some such spirit as this these reviews are given to those who care to read them, and if they present some little evidence of this broader conception of the meaning of all this human endeavor it will repay many times over the effort made in producing them.

BOOK REVIEWS.

VADEMECUM DER GEBURTSHILFE FUER STUDIERENDE UND AERZTE. VON PROFESSOR DR. M. LANGE. Mit 118 Abbildungen. Dritte, vermehrte und umgearbeitete Auflage. Wuerzburg: A. Stuber's Verlag. (G. E. Stechert, New York.)

There is an essential difference between the average American and German "Vademecum" or "Quiz-Compend." In both cases we have to deal with a little book that may be easily carried in the coat pocket, but while the American editor obtains the compact size by "eliminating everything not essential," the German editor reduced the size of his volume by using small and closely set type.

To read the little volume before us, undoubtedly means a hard strain upon the eyes, but it is quite remarkable to see how much valuable information is given in these few pages, notwithstanding the fact that there are 118 good illustrations.

The teachings of the writer are up-to-date in every detail.

THE AFTER-TREATMENT OF OPERATIONS. A Manual for Practitioners and House Surgeons. By P. LOCKHART MUMMERY, F. R. C. S. William Wood & Company, New York. 1903.

The after-treatment of operative cases is a subject of such importance that it is surprising to find how little has hitherto been written about it. What has been written is to be found, for the most part, in a somewhat fragmentary form in the larger text-books, and is not convenient for reference. Thus it can be easily seen that the little volume before us fills a recognized want for a ready reference. The author avoids entering into any discussion upon the relative value of the different forms of treatment adopted by different authors, but gives for each case just that line of treatment which in his experience is the most practical one.

Each chapter is devoted to the consideration of the typical operations of a certain part of the body, considerable space being given to the operations on the abdomen. The author's teachings are apparently based upon an extensive personal experience and upon sound judgment, and seem, as a whole, very acceptable.

INTERNATIONAL CLINICS. A quarterly of illustrated clinical lectures and especially prepared original articles by leading members of the medical profession throughout the world. Edited by A. O. J. KELLY, A. M., M. D. Vol. iii, thirteenth series, 1903, pages viii–305. Illustrated. Philadephia: J. B. Lippincott Co. 1903.

The most recent issue of the International Clinics follows along the same lines as its predecessors. The feature of the volume is a series of articles on diseases of the gall-bladder and gall-ducts, in which this subject is adequately discussed from several points of view. Among the other articles of special interest may be mentioned an enthusiastic defense of the serum treatment of typhoid fever by Dr. Chantemesse, of Paris, and an article on atypical forms of pneumonia by R. M. Leslie, of London. The illustrations are of the high degree of excellence that one has learnt to expect from this publication, four colored plates illustrating microscopic sections of rheumatic "carditis" being particularly beautiful.

THE REFRACTION AND MOTILITY OF THE EYE. For Students and Practitioners. By WILLIAM NORWOOD SUTER, M. D., Assistant Surgeon, Episcopal Eye, Ear and Throat Hospital, Washington, D. C. Illustrated with 101 engravings in the text and four plates in colors and monochrome. Lea Brothers & Co., Philadelphia and New York. 1903.

The need of a short and at the same time comprehensive treatise in the English language on the allied subjects of the Refraction and Motility of the Eye has long been felt, and it may be said that Dr. Suter has succeeded admirably in filling this gap in ophthalmic literature. The work is divided into four parts: Part I (Chaps. I–VIII) deals with the Theory of Refraction, Part II (Chaps. IX–X) with the Refraction and Motility of the Normal Eye, Part III (Chaps. XI–XVI) with Errors of Refraction, Part IV (Chaps. XVII–XVIII) with Disorders of Motility. The mathematical formulæ dealing with the theory of refraction have been abridged, and are entirely intelligible to one having a knowledge of elementary algebra and trigonometry.

Dr. Suter possesses a precise and careful style which enables him to express himself at all times with clarity and distinctness.

The book is singularly free from typographical errors. Page 228, fourth line from the bottom "defective" is spelled "defeetive." Some of the geometrical figures illustrating the mathematical demonstrations are drawn to so small a scale that it is difficult to follow the explanations in the text. This is especially true of the figure on page 49, illustrating the algebraic relation between conjugate foci.

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